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Alaska Department of Fish and Game
Division of Commercial Fisheries
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Kukokwim Management Area Salmon

Catch and Escapement Statistics, 1987

by

Cindy J. Anderson

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ABSTRACT

Catch statistics, spawning escapement estimates and age composition, sex, and length data for chinook (*Oncorhynchus tshawytscha*), sockeye (*O. nerka*), coho (*O. kisutch*), pink (*O. gorbuscha*), and chum salmon (*O. keta*) are presented for the Kuskokwim area in 1987. Commercial gill net fisheries harvested 1,318,438 salmon. The total was the third largest catch ever recorded. Chum salmon catches were 53% greater than the 1982-86 average. The largest catches of all species, except pink salmon were reported in District 1. Sockeye and chum salmon catches both reached high levels. The subsistence harvest was composed of 71,804 chinook, 31,555 sockeye, 18,085 coho, 291 pink and 70,709 chum salmon. The subsistence harvest was 17% less than the 1982-86 average. The commercial chinook salmon harvest was composed primarily of age 1.4 fish (59%) and predominantly (70%) males. The sockeye salmon catch was 42% greater than the 1982-86 average and was the largest catch on record. Most sockeye salmon (78%) in the Kuskokwim area commercial catch were age 1.3. The commercial coho salmon catch for all districts was composed primarily (78%) of age 2.1 individuals and females (51%). The chum salmon commercial catch was dominated by the 0.3 (52%) and 0.4 (45%) age classes. The total chum salmon catch was composed mostly of females (57%). Chinook salmon escapement samples were predominantly age 1.4 and ranged from 28% to 48% female. Sockeye salmon escapement samples were dominated by the 1.2 and 1.3. age classes. Coho salmon escapement age class composition data was similar to that of the commercial catch (79% age 2.1). Escapements of chum salmon were also similar to the commercial catch, with predominance of ages-0.4 and -0.3. Sex ratios ranged from 28% to 52% female.

KEY WORDS: Kuskokwim, chinook salmon, chum salmon, sockeye salmon, coho salmon, age classification, catch, escapement

INTRODUCTION

The Kuskokwim Management Area includes all waters of Alaska from the southernmost tip of Cape Newenham north to the Naskonat Peninsula, as well as the waters surrounding Nunivak and St. Matthew Islands. The management area is divided into four districts (Figure 1). Districts 1 and 2 are located within the Kuskokwim River. Kuskokwim Bay Districts 4 and 5 are located in the marine waters at the mouths of the Kanektok and Goodnews Rivers. The Kuskokwim River drainage supports major runs of chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*) and chum (*O. keta*) salmon. Major runs of these three species are also found in the Kanektok and Goodnews Rivers which support even-year runs of pink salmon (*O. gorbuscha*) and significant annual runs of sockeye salmon (*O. nerka*). Annual runs of sockeye salmon in the Kuskokwim River drainage are occasionally of significant size, but in an average year they are incidental to commercial catches of other species. Pink salmon are infrequent in the commercial catch in the Kuskokwim River drainage. In the Kuskokwim management area these five species of salmon contribute to commercial and subsistence fisheries.

Most commercial fishing takes place in Districts 1, 4 and 5. Most subsistence fishing occurs in District 1 within the lower 219 km (136 mi) of the Kuskokwim River. Set and drift gillnets with maximum stretched-mesh size of 6 in (15.2 cm) are the only legal commercial fishing gear, and nearly all commercial fishing is done with drift gill nets. Subsistence fishing may be conducted with gill nets of any mesh size, fish wheels, beach seines, and in designated areas, spears. Subsistence fishing commonly occurs with set and drift gill nets throughout the Kuskokwim area, but fish wheels are used only in the upper Kuskokwim River. The Kuskokwim Annual Management Report (ADF&G 1988) provides a more detailed description of Kuskokwim area fisheries.

The Kuskokwim River produces the largest annual runs of chinook, sockeye, coho, and chum salmon in the area, while the largest annual pink salmon runs are produced in the Kanektok drainage. The Alaska Department of Fish and Game (ADF&G) conducts several projects to document information on commercial and subsistence harvests and spawning escapements. Specific objectives of projects include (1) documenting catches in each fishery; (2) sampling catches for age, sex and size data; (3) assessing the magnitude of spawning escapements by aerial and ground surveys, hydroacoustic counters, towers, and weirs; and (4) sampling selected spawning populations for age, sex, and size data.

Between 1969 and 1981 Kuskokwim River salmon age, sex, and size data summaries were annually reported. Since 1982 these data have been reported by Huttunen (1984; 1985; 1986; 1987; 1989). The data for 1987 are documented within the present report and were used to regulate Kuskokwim area salmon fishery harvests and monitor the status of the spawning stocks.

METHODS

Quantifying Catch and Escapement

Commercial catch data presented in this report were compiled for each management district and were based on computer tabulations of individual harvest receipts (fish tickets) that, by law, document the sale of salmon from fishermen to processors. Subsistence catch data were tabulated from personal interviews of subsistence fishermen in selected villages and from mail-in questionnaires or catch calendars. Methods used for subsistence harvest estimation have been described in ADF&G (1988).

Most escapement estimates were based on peak aerial surveys of selected major spawning areas. Aerial surveys were conducted during periods of probable peak abundance, and resulting indices were assumed to represent overall escapement trends. Because of the extensive spawning areas, most were only surveyed once during the season. Additional escapement estimates were obtained by other methods. Chum salmon escapements to the Aniak River (Schneiderhan 1988a) and chinook, chum and sockeye salmon escapements to the Kanektok River (Huttunen 1988) were enumerated using hydroacoustic equipment. Chinook, chum and sockeye salmon escapement to the Goodnews River were enumerated using a counting tower (Schultz and Burkey 1989). Chinook, chum, sockeye and coho salmon escapement to the Kogrukluk River were enumerated by ADF&G using a weir (Schneiderhan 1988b).

Age, Sex and Length Determination

Commercial catches of chinook, chum, coho, and sockeye salmon were sampled for age, sex and length during the fishing season. Subsistence samples were only collected from chinook salmon in District 1. Pink salmon were not sampled. Escapement samples of chinook, chum, coho, and sockeye salmon were collected throughout the season using beach seines on the Goodnews and Kanektok Rivers, a weir on the Kogrukluk River, a subsistence set gill net and beach seine on the Holitna, and from carcasses recovered from the spawning grounds.

Age was determined from annuli on scales taken from the left side of sampled salmon approximately two rows above the lateral line in an area transected by a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963). Scales were mounted on gum cards and permanent impressions made in cellulose acetate (Clutter and Whitesel 1956). Ages were reported in European notation: the first digit refers to the freshwater age and does not include the year spent in the gravel, and the second digit refers to the ocean age (e.g. 1.2 Koo; 1962). Sex was determined by examining external morphological features of salmon which had sufficiently developed secondary sexual characteristics. Gonads were examined whenever external characteristics were not sufficiently distinct. Lengths were measured from mid-eye to fork of tail. Average length by age and sex was calculated separately for each fishery and escapement sampled.

Age and sex composition was estimated for each fishery sampled using a stratified systematic sampling design (Cochran 1977). Time strata were of variable length

depending on the number of samples collected. An attempt was made to sample a sufficient number of each salmon species within a strata to simultaneously estimate the true proportion of each major age class in the catch within 5 percentage points 90% of the time (Thompson, 1987). Since these data were collected, sample size goals were revised to estimate the proportion in each age class within 10 percentage points 95% of the time (Thompson, 1987). Some strata were changed to reflect decreased needs for accuracy and precision.

Age composition estimates and associated variances were calculated with procedures outlined by Cochran (1977) for stratified sampling programs:

$$C_{tj} = C_t P_{tj} \quad , \tag{1}$$

$$V\,[C_{tj}] = (C_t)^2 \quad \frac{P_{tj}(P_{tj}-1)}{N_{t-1}} \quad , \tag{2}$$

$$C_j = \sum_{t=1}^{T} C_{tj} \quad , \tag{3}$$

$$V\,[C_j] = \sum_{t=1}^{T} V\,[C_{tj}] \quad , \tag{4}$$

Where:
- C_t = the number of salmon caught in sampling stratum t,
- P_{tj} = the proportion of age j in stratum t,
- N_t = the number of samples in stratum t,
- C_{tj} = the estimated number of salmon of age j during stratum t,
- T = total number of strata, and
- C_j = estimated number of fish of age j for the season, T.

If sample sizes were insufficient to attain the desired levels of precision and accuracy within predetermined strata, sample strata were pooled until sample size requirements were met or all samples were included within a single stratum. The age, sex, and size composition of subsistence harvests in Districts 2, 4, and 5 and commercial harvests in District 2 were estimated using proportions calculated from samples obtained from the nearest commercial catch. I felt that these samples would be representative of adjacent non-sampled areas because gear used to harvest salmon for subsistence purposes is frequently the same gear used for commercial fishing.

RESULTS AND DISCUSSION

Commercial and Subsistence Harvest

The Kuskokwim Management Area commercial catch was 1,318,438 salmon in 1987 (Table 1). The species composition was 65,558 chinook, 170,849 sockeye, 478,594 coho, 163 pink, and 603,274 chum salmon. The total catch was the third largest ever recorded and was 16% greater than the 1982-86 (most recent 5-year) average (ADF&G 1988). The chinook salmon harvest was approximately 7% less than the 1982-86 average. The sockeye salmon catch was 41% greater than the 1982-86 average and the largest catch on record. The coho salmon catch was 11% below the 1982-86 average. The pink salmon harvest was 140% below the most recent 5-odd-year average (1977-1985). Chum salmon catches were 53% greater than the 1982-86 average. Largest catches of all species, except pink salmon, were reported from District 1, with sockeye and chum salmon catches reaching record levels. Commercial catches in District 2 were predominately chum and coho salmon.

A record 798 Kuskokwim area limited entry permit holders landed salmon in 1987 (Appendices A.1 through A.4). The ex-vessel value of the catch was $6,393,000, the largest total harvest value in the history of this fishery.

The Kuskokwim area subsistence harvest was estimated to be 192,444 salmon (Table 1). The subsistence harvest was composed of 71,804 chinook, 31,555 sockeye, 18,085 coho, 291 pink, and 70,709 chum salmon. The total subsistence harvest was 20% less than the 1982-86 average. Subsistence catches of sockeye, pink, and chum salmon, historically pooled and classified as small salmon, were 49% less than the 1982-86 average. The chinook salmon catch was the largest on record and exceeded the 1982-86 average by 32%.

Escapement Abundance

Minimum and optimum escapement objectives have been established by ADF&G for most major spawning populations of chinook, sockeye, coho and chum salmon (Tables 2; ADF&G 1988). Most escapement objectives were based on historical aerial survey indices of abundance. As more information becomes available, escapement objectives will be reassessed.

Chinook salmon spawn in tributaries throughout the Kuskokwim River drainage and the Kanektok and Goodnews Rivers of Kuskokwim Bay. Chinook salmon escapement objectives, usually based on aerial survey results, have been established for Canyon Creek (200), Kwethluk (1,000), Kisaralik (1,000), Kasigluk (1,000), Tuluksak (400), Aniak (3,100), Holitna (2,000 by aerial survey, 10,000 by weir count), Pitka Fork Salmon (1,300), Kanektok (5,800), and Goodnews (1,600 by aerial survey, 3,500 by tower count) Rivers (ADF&G 1988).

Aerial surveys of most major tributaries were completed in 1987 (Table 2). Unfortunately, water clarity was poor during most surveys. In Kuskowkim River

tributaries the chinook salmon total escapement index assessed using aerial and weir counts was 8,448. Due to poor survey conditions data were not available to confirm achievement of escapement objectives. Total chinook salmon escapements to the Kanektok and Goodnews Rivers were estimated at 4,107 and 2,274, respectively. Escapement objectives were not achieved in both drainages.

The Kuskokwim, Kanektok, and Goodnews Rivers support major spawning populations of sockeye salmon. Escapement objectives have been established for the Holitna (1,000 by aerial survey, 2,000 by weir count), Kanektok (32,000) and Goodnews (20,000 by aerial survey, 40,000 by tower count) Rivers. In 1987 the Goodnews River had sockeye salmon counts of 48,000 by aerial survey and 28,000 by counting tower which counts approximately 50% of drainages. The Kanektok River had counts of 30,000 sockeye salmon by aerial survey and 10,000 by sonar count. Aerial escapement index objectives in the Goodnews River were exceeded, and the Kanektok River sockeye salmon aerial index was only about 7% less than the objective. Aerial survey conditions for sockeye salmon were poor in the Kuskokwim River drainage, but index counts were obtained for the Aniak (58), Chineekluk (33), Chukowan (120), Holitna (382), Kisaralik (15), and Kogrukluk (415) Rivers. The major escapement project in the Kuskokwim River drainage was inoperable in 1987, which coupled with poor aerial surveys, made determination of sockeye escapement impossible.

Kuskokwim area drainages support extensive and widely scattered spawning populations of coho salmon. Escapement objectives have been established for the Kogrukluk (25,000 by weir count), Kanektok (25,000 by aerial survey), and Goodnews (17,000 by aerial survey) Rivers. Escapement goals for coho salmon were met when an estimated total of 25,800 coho salmon passed the weir in 1987. An aerial survey of the Kanektok River showed 20,000 coho salmon to be present during peak mainstem passage. This was 80% of the escapement goal. Aerial surveys during periods of peak coho salmon migration for most systems were prevented by inclement weather.

Tributaries throughout the Kuskokwim area support spawning populations of chum salmon. Escapement aerial survey objectives, usually based on aerial survey results have been established for the Kwethluk (7,000), Kisaralik (8,000), Kasigluk (8,000), Tuluksak (5,000), Aniak (250,000 by sonar count), Holitna (49,000), Kogrukluk (30,000 by weir count), Kanektok (30,500), and Goodnews (21,000 by aerial index, 15,000 by tower count) Rivers.

In 1987 most primary chum salmon spawning streams were surveyed. Most escapements for chum salmon throughout the Kuskokwim area were not achieved. Escapement to the Aniak River was estimated to be 193,000 chum salmon based on sonar; the weir on the Kogrukluk River recorded a passage of 17,400 chum salmon. Chum salmon index escapement to the Goodnews and Kanektok Rivers combined was 19,000 chum salmon based on aerial surveys and 28,600 based on tower and sonar counts.

Age, Sex, and Length Composition

Chinook Salmon

Commercial chinook salmon catches in Districts 1, 4, and 5, and the subsistence catch in Districts 1 and 2 combined were sampled in large enough numbers to estimate harvest age composition at predetermined levels of accuracy and precision. The 1987 chinook salmon harvest was comprised of 80,575 age 1.4 (59%), 29,724 age 1.2 (21%), 23,043 age 1.3 (16%), 3,842 age 1.5 (3%), and 113 age 1.1 (1%; Table 3). Males dominated catches and contributed 95,438 (69%) chinook salmon to the combined commercial and subsistence catch.

Samples from Districts 4 and 5 commercial catches were predominantly (50% to 53%) age 1.4 chinook salmon from the 1981 brood year. District 1 and 2 commercial catches indicated a strong return of 1.2 (47%) and 1.4 (36%) age classes. Males again dominated commercial catch samples and comprised 48% of the District 5 catch and 83% of the District 4 catch (Appendices C.1-C.4).

Subsistence catches of chinook salmon from Districts 1 and 2 were sampled, but those from Districts 4 and 5 were not. Subsistence catches were predominantly age 1.4 (74%) chinook salmon (Appendices C.5 - C.7).

Average length of male chinook salmon by age group ranged from 360 mm for age 1.1 to 907 mm for age 1.5, while average lengths of females ranged from 555 mm for age 1.2 to 932 mm for age 1.5 (Table 4). Because external morphological sexual characteristics are poorly developed in young age classes just entering fresh water, there was some uncertainty in determining sex of age 1.2 chinook salmon.

Chinook salmon escapements to the Kanektok and Kogrukluk Rivers were sampled to estimate age classes. Similar to the District 1 commercial catch samples, which were 78 % males and mostly age 1.2 (47%), chinook escapement samples from the Kogrukluk River weir which were 72% males and 49% age 1.4 and all age classes combined were (72%) males (Table 5). Kanektok River chinook salmon were 74% age 1.4, and all ages combined had a 52:48 male:female ratio.

Average lengths of male chinook salmon in escapement samples ranged from 413 mm for age 1.1 to 970 mm for age 1.5, while average lengths of females ranged from 537 mm for age 1.2 to 890 mm for age 1.4 (Table 6).

Sockeye Salmon

Commercial catches of sockeye salmon in Districts 1, 4, and 5 were sampled to estimate age and sex composition of the harvest. The 1987 sockeye salmon commercial and subsistence catches were composed of 158,181 age 1.3 (78%), 17,873 age 2.3 (9%) 15,453 age 1.2 (7.6%), 4,980 age 0.3 (2.4%), 2,931 age 2.2 (1.4%), 2,637 age 1.4 (1.3%), and 289 age 0.4 (.1%; Table 7). Most (87%) all sockeye salmon spent only one winter in fresh water before migrating to sea. The commercial catch was composed of 76,327 males (45%) and 94,471 females (55%).

Most (69% to 93%) commercial catch samples were age 1.3 sockeye salmon from the 1982 brood year (Appendices D.1-D.4). The remainder of the commercial catch from

Districts 4 and 5 was age 1.2 (7% to 31%), while the remainder from District 1 was composed of ages -2.3 (11%), -1.2 (7%) and -0.3 (3%). Sex composition of district catches ranged from 41% to 57% females.

Subsistence catches of sockeye salmon in Districts 1, 4, and 5 were estimated but not sampled. It was assumed that the age and sex composition of subsistence catches were the same as those estimated for commercial catch samples in these districts (Appendices D.5-D.7).

Average lengths of commercially caught male sockeye salmon by age group ranged from 537 mm for age 1.2 to 627 mm for age 0.4, while average lengths of females ranged from 517 mm for age 1.2 to 579 mm for age 1.3 (Table 8).

Sockeye salmon escapement samples were collected from the Goodnews and Kanektok Rivers in 1987 (Table 9). Kanektok River escapements were dominated by age 1.2 (76%) sockeye salmon from the 1983 brood year. Goodnews River escapements were 86% age 1.3. Kanektok River samples were comprised of 53% female sockeye salmon, while Goodnews River samples were 47% female.

Average lengths of male sockeye salmon in escapement samples from the Goodnews and Kanektok Rivers ranged from 523 mm for age 2.2 to 631 mm for age 1.4, while average lengths of females ranged from 499 mm for age 1.2 to 575 mm for age 1.4 (Table 10).

Coho Salmon

Commercial coho salmon catches were collected from Districts 1, 4, and 5 to estimate the age and sex composition of the harvest. The Kuskokwim area harvest was composed of 387,111 (78%) age 2.1, 69,930 (14%) age-3.1, and 39,640 (8%) age 1.1 coho salmon (Table 11). The sex composition of the coho harvest was 243,629 (49%) males and 253,052 (51%) females. There was a tendency for the proportion of age -1.1 coho salmon to decrease over the course of the run and for the proportion of age -3.1 coho salmon to increase (Appendix E.1.).

Kuskokwim area coho salmon subsistence catches were much less than commercial catch and so were not sampled. Age and sex compositions of subsistence catches were estimated using samples from adjacent commercial fishing areas (Appendices E.5-E.7).

Average lengths of commercially harvested male coho salmon by age group ranged from 544 mm for age 1.1 to 621 mm for age-3.1, while average lengths of females ranged from 557 mm for age 1.1 to 585 mm for age-3.1 (Table 12).

The coho salmon escapement was sampled only from the Kogrukluk River in 1987. As found for commercial catch samples, age 2.1 coho salmon dominated the escapement samples (79%; Table 13). The escapement was composed of 42% females, a lower proportion than District 1 catch samples (51% female).

Average lengths for male coho salmon in escapement samples ranged from 551 mm for age 1.1 to 576 mm for age-3.1, while average lengths of females ranged from 560 mm for age 1.1 to 565 mm for age 2.1 (Table 14).

Chum Salmon

Chum salmon in Districts 1, 4, and 5 were sampled throughout the commercial fishing season in 1987. The age composition of the commercial catch and subsistence for this area was estimated to be 353,387 age 0.3 (52%) and 303,923 age 0.4 (45%), 10,790 age 0.2 (1.6%), and 5,884 age 0.5 (0.8%; Table 15). Sex composition of the total catch was estimated to be 291,078 (43%) males and 382,906 (57%) females. The commercial catch in District 1 consisted mainly of age 0.3 (52%) and age 0.4 (45%) chum salmon, while the District 4 commercial catch were mostly age 0.4 (62%). District 5 commercial chum salmon samples were mostly age 0.3 (66%; Appendix F.1-F.4). The proportion of age 0.3 chum salmon increased markedly through time in District 1 (Appendix F.1). Sex composition of commercial catches ranged from 44% to 57% female.

Subsistence catches of chum salmon were not sampled. The closest commercial fishing district samples were used to estimate age and sex composition of subsistence catches (Appendices F.5-F.7). Average lengths of male chum salmon in commercial catch samples ranged from 556 mm for age 0.2 to 640 mm for age 0.5, while average lengths of females ranged from 537 mm for age 0.2 to 604 mm for age 0.5 (Table 16).

Chum salmon escapements samples were collected from the Kogrukluk, Kanektok, and Goodnews Rivers to estimate age and sex composition. Age 0.4 chum salmon from the 1982 brood year dominated escapement samples from the Kogrukluk and Kanektok Rivers. Chum salmon samples from the Goodnews River drainage were 60% age 0.3 and 40% age 0.4 (Table 17). Sex compositions of samples ranged from 28% to 52% female. Average lengths of male chum salmon in the escapement ranged from 536 mm for age 0.3 to 621 mm for age 0.5, while average lengths of females ranged from 517 mm for age 0.3 to 592 mm for age 0.4 (Table 18).

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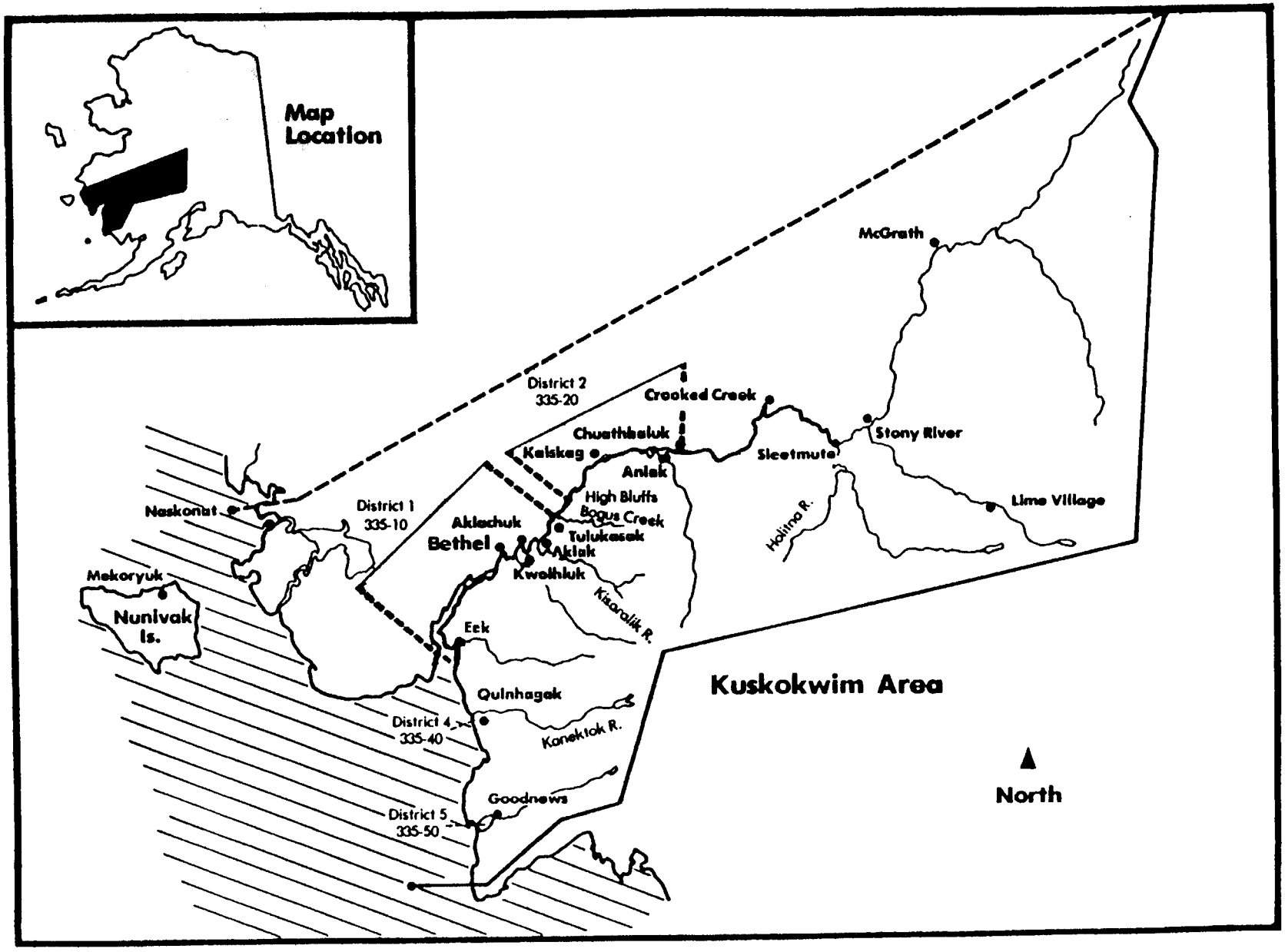

Figure 1. Kuskokwim Area Map.

Table 1. Commercial and subsistence harvest of Kuskokwim area salmon in numbers of fish by fishery, district, and species, 1987.

COMMERCIAL HARVEST (numbers of fish)

District	Chinook	Sockeye	Coho	Pink	Chum	Total
1	33,907	134,631	385,321	41	566,499	1,120,399
2	2,272	1,971	14,146	2	7,837	26,228
4	26,022	6,489	50,070	66	8,557	91,204
5	3,357	27,758	29,057	54	20,381	80,607
Subtotal	65,558	170,849	478,594	163	603,274	1,318,438

SUBSISTENCE HARVEST (numbers of fish)

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Kuskokwim River	67,325	29,533	17,917	291	69,047	184,113
Quinhagak	3,663	1,067	125	0	1,084	5,939
Goodnews Bay	816	955	43	0	578	2,392
Subtotal	71,804	31,555	18,085	291	70,709	192,444
Total	137,362	202,404	496,679	454	673,983	1,510,882

Table 2. Salmon escapement indices in Kuskokwim area spawning tributaries by species and method, 1987.

Location[a]	Date	Chinook	Sockeye	Coho	Pink	Chum
KUSKOKWIM RIVER:						
Aniak R.[b]	7/27/87	176	58			2,106
Aniak Sonar.[c]	7/31/87					193,464
Bear Ck.			---not surveyed---			
Cheeneetnuk R.[b]	7/26/87	317	0			
Chineekluk Ck.	7/26/87	20	33			
Chukowan R.	7/27/87	258	120			180
Eek R.	7/27/87	1,739	0			335
Mdl. Fk. Eek R.	7/27/87	387	0			0
Holitna R.[bd]	7/27/87	465	382			4,633
Holokuk R.	7/26/87	208	0			1,590
Kisaralik R.[b]	7/31/87	29	15			0
Kogrukluk R.[e]	7/27/87	4,063	973	25,870		17,422
Kwethluk R.			---not surveyed---			
Oskawalik R.	7/30/87	188	0			602
Salmon R.[f]	7/27/87	516	0			2,090
N. Fk. Salmon R.[g]	7/26/87		---not surveyed---			
Md. Fk. Salmon R.[g]	7/26/87		---not surveyed---			
S. Fk. Salmon R.[g]	7/26/87		---not surveyed---			
Tuluksak R.[b]	7/28/87	82	0			263
Kuskokwim River Subtotal (aerial and weir/sonar)		8,448	1,581			222,170
KUSKOKWIM BAY:						
Goodnews River[h]	2/28/87	2,207	48,960	2,420	520	9,696
Goodnews Tower[i]	7/30/87	2,274	28,871	62	64	17,517
Kanektok River[j]		4,107	30,289	20,056	0	9,420
Kanektok Sonar[c]	7/18/87	11,031	10,520		0	11,132
Kuskokwim Bay Subtotal (aerial survey)		6,314	54,769	22,476	520	19,116
Kuskokwim Bay Subtotal (sonar and tower)		13,305	39,391	62	64	28,649

[a]Survey visibility was good to fair, unless otherwise noted.
[b]Poor aerial survey conditions.
[c]Adjusted sonar count.
[d]Downstream from Ignatti Weir on the Holitna River.
[e]Weir estimate revised in 1988 using aerial survey data.
[f]Aniak River system.
[g]Pitka Fork.
[h]Peak aerial survey of Middle Fork and lakes only.
[i]Entire drainage estimate based upon expanded tower counts.
[j]Surveys from 7/16-8/27, peak species count used.

Table 3. Total harvest (in numbers of fish) of Kuskokwim area chinook salmon by age, sex, and fishery, 1987.

District	Fishery	Sample Size	Sex	Brood Year and Age Group 1984 1.1	1983 1.2	1982 1.3	1981 1.4	1980 1.5	TOTAL
1	Commercial[a]	550	Female	0	555	925	5610	308	7398
			Male	0	15412	4377	6473	185	26447
			Total	0	15967	5302	12145	493	33907
2	Commercial[a]		Female	0	37	62	376	21	496
			Male	0	1033	293	434	12	1772
			Total	0	1070	355	814	33	2272
	Subsistence[b]	426	Female	0	136	1881	23019	1597	26633
			Male	0	3973	8866	26922	932	40693
			Total	0	4109	10747	49941	2529	67325
4	Commercial[c]	525	Female	0	0	0	4263	248	4510
			Male	99	6939	4659	9467	347	21512
			Total	99	6939	4659	13730	595	26022
	Subsistence[c]		Female	0	0	0	600	35	635
			Male	14	977	656	1333	49	3028
			Total	14	977	656	1933	84	3663
5	Commercial[d]	271	Female	0	99	421	1152	87	1759
			Male	0	434	644	520	0	1598
			Total	0	533	1065	1672	87	3357
	Subsistence[d]		Female	0	24	102	280	21	428
			Male	0	105	157	126	0	388
			Total	0	129	259	406	21	816
TOTAL HARVEST			Female	0	851	3391	35,300	2,317	41,859
			Male	113	28,873	19,652	45,275	1,525	95,438
			Total	113	29,724	23,043	80,575	3,842	137,297

[a]Estimates based on District 1 commercial catch samples.
[b]Entire Kuskokwim River subsistence harvest.
[c]Estimates based on District 4 commercial catch samples.
[d]Estimates based on District 5 commercial catch samples.

Table 4. Length (in mm mid-eye to fork-of-tail) by age and sex of Kuskokwim area chinook salmon commercial catch samples, 1987.

Fishery	Sex		Brood Year and Age Group 1984 1.1	1983 1.2	1982 1.3	1981 1.4	1980 1.5
District 1	Female	Mean length		555	737	860	803
		Std Error		15.8	19.0	8.2	71.8
		Sample Size		9	15	91	5
	Male	Mean length		551	680	832	907
		Std Error		3.1	9.8	7.6	46.3
		Sample Size		250	71	105	3
District 4	Female	Mean length				867	932
		Std Error				5.4	9.7
		Sample Size				86	5
	Male	Mean length	360	526	716	837	904
		Std Error	15.0	4.0	6.9	4.4	25.2
		Sample Size	2	140	94	191	7
District 5	Female	Mean length		561	738	857	919
		Std Error		28.4	11.3	7.4	36.3
		Sample Size		8	34	93	6
	Male	Mean length		533	715	840	
		Std Error		12.1	11.6	14.5	
		Sample Size		35	52	42	

Table 5. Age and sex composition of Kuskokwim area chinook salmon escapement samples, 1987.

River	Sample Size	Sex	Brood Year and Age Group 1984 1.1	1983 1.2	1982 1.3	1981 1.4	1980 1.5	1979 1.6	Total
Kogrukluk[a]	117	Female	0.0	0.0	0.9	27.4	0.0	0.0	28.2
		Male	0.0	25.6	23.9	21.4	0.9	0.0	71.8
		Total	0.0	25.6	24.8	48.7	0.9	0.0	100.0
Holitna[b]	37	Female	0.0	0.0	0.0	16.2	0.0	0.0	16.2
		Male	0.0	32.4	32.4	18.9	0.0	0.0	83.8
		Total	0.0	32.4	32.4	35.1	0.0	0.0	100.0
Kanektok[c]	381	Female	0.0	0.8	3.7	39.4	3.9	0.3	48.0
		Male	0.5	2.9	10.8	34.6	3.1	0.0	52.0
		Total	0.5	3.7	14.4	74.0	7.1	0.3	100.0
Goodnews[d]	39	Female	0.0	5.1	17.9	23.1	7.7	0.0	53.8
		Male	0.0	12.8	7.7	25.6	0.0	0.0	46.2
		Total	0.0	17.9	25.6	48.7	7.7	0.0	100.0

[a]Samples collected at weir on 7/15-7/16.
[b]Samples collected from one subsistence set net on 7/5,7/18, 7/19.
[c]Combined samples were collected in beach seine (n=6) and carcass survey (n=375).
[d]Samples collected in beach seine 7/1-7/30.

Table 6. Length (mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area chinook salmon escapement samples, 1987.

Fishery	Sex		Brood Year and Age Group 1984 1.1	1983 1.2	1982 1.3	1981 1.4	1980 1.5	1979 1.6
Kogrukluk[a]	Female	Mean length			810	869		
		Std Error			0.0	8.4		
		Sample Size			1	32		
	Male	Mean length		555	720	821	970	
		Std Error		8.0	10.1	12.3	0.0	
		Sample Size		30	28	25	1	
Holitna[b]	Female	Mean length				890		
		Std Error				27.0		
		Sample Size				6		
	Male	Mean length		583	669	808		
		Std Error		16.7	18.0	26.5		
		Sample Size		12	12	7		
Kanektok[c]	Female	Mean length		542	742	860	884	816.0
		Std Error		21.3	22.3	4.8	16.0	0
		Sample Size		3	14	150	15	1
	Male	Mean length		413	531	741	855	944
		Std Error		27.5	19.2	13.4	7.0	17.5
		Sample Size		2	11	41	132	12
Goodnews[d]	Female	Mean length		537	773	808	863	
		Std Error		45.0	40.8	16.6	13.9	
		Sample Size		2	7	9	3	
	Male	Mean length		461	760	851		
		Std Error		30.8	54.1	19.0		
		Sample Size		5	3	10		

[a]Samples collected at weir on 7/15-7/16.
[b]Samples collected from one subsistence set net on 7/5, 7/18, 7/19.
[c]Combined samples were collected in beach seine (n=6) and carcass survey (n=375).
[d]Samples collected in beach seine 7/1-7/30.

Table 7. Total harvest of Kuskokwim area sockeye salmon in numbers of fish by age, sex, and fishery, 1987.

District	Fishery	Sample Size	Sex	Brood Year and Age Group: 1983 0.3	1983 1.2	1982 0.4	1982 1.3	1982 2.2	1981 1.4	1981 2.3	TOTAL
1	Commercial[a]	567	Female	2849	6174	0	56274	1900	475	9023	76695
			Male	1187	2849	237	46064	475	1662	5461	57936
			Total	4037	9023	237	102339	2374	2137	14484	134631
2	Commercial[a]		Female	42	90	0	824	28	7	132	1123
			Male	17	42	3	674	7	24	80	848
			Total	59	132	3	1498	35	31	212	1971
	Subsistence[b]		Female	625	1354	0	12344	417	104	1979	16824
			Male	260	625	52	10105	104	365	1198	12709
			Total	885	1979	52	22449	521	469	3177	29533
4	Commercial[c]	153	Female	0	679	0	1993	0	0	0	2672
			Male	0	1315	0	2502	0	0	0	3817
			Total	0	1993	0	4496	0	0	0	6489
	Subsistence[c]		Female	0	112	0	328	0	0	0	439
			Male	0	216	0	411	0	0	0	628
			Total	0	328	0	739	0	0	0	1067
5	Commercial[d]	546	Female	0	813	0	13167	0	0	0	13981
			Male	0	1118	0	12608	0	0	0	13726
			Total	0	1932	0	25826	0	0	0	27758
	Subsistence[d]		Female	0	28	0	453	0	0	0	481
			Male	0	38	0	434	0	0	0	472
			Total	0	66	0	887	0	0	0	955
TOTAL HARVEST			Female	3,516	9,250	0	85,383	2,345	586	11,134	112,214
			Male	1,464	6,203	289	72,798	586	2,051	6,739	90,130
			Total	4,980	15,453	289	158,181	2,931	2,637	17,873	202,344

[a]Estimates based on District 1 commercial catch samples.
[b]Entire Kuskokwim River subsistence harvest.
[c]Estimates based on District 4 commercial catch samples.
[d]Estimates based on District 5 commercial catch samples.

Table 8. Length (in mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area sockeye salmon commercial catch samples, 1987.

Fishery	Sex		Brood Year and Age Group 1983 0.3	1983 1.2	1982 0.4	1982 1.3	1982 2.2	1981 1.4
District 1	Female	Mean length	577	538		579	541	571
		Std Error	5.1	6.3		1.4	11.5	22.0
		Sample Size	12	26		237	8	2
	Male	Mean length	610	537	627	618	549	619
		Std Error	12.2	13	0.0	1.9	3.5	12.0
		Sample Size	5	12	1	194	2	7
District 4	Female	Mean length		517		574		
		Std Error		8.9		3.5		
		Sample Size		16		47		
	Male	Mean length		542		599		
		Std Error		4.1		4.2		
		Sample Size		31		59		
District 5	Female	Mean length		534		575		
		Std Error		7.9		1.7		
		Sample Size		16		259		
	Male	Mean length		546		603		
		Std Error		7.4		1.8		
		Sample Size		22		248		

Table 9. Age and sex composition of Kuskokwim area sockeye salmon escapement samples, 1987.

River	Sample Size	Sex	Brood Year and Age Group 1983 0.3	1983 1.2	1982 0.4	1982 1.3	1982 2.2	1981 1.4	1981 2.3	Total
Kogrukluk[a]	43	Female	0.0	0.0	0.0	60.5	0.0	0.0	0.0	60.5
		Male	2.3	0.0	0.0	37.2	0.0	0.0	0.0	39.5
		Total	2.3	0.0	0.0	97.7	0.0	0.0	0.0	100.0
Holitna[b]	166	Female	0.0	0.0	0.0	56.6	0.0	8.4	1.2	66.3
		Male	0.0	0.6	0.0	31.9	0.0	0.0	1.2	33.7
		Total	0.0	0.6	0.0	88.6	0.0	8.4	2.4	100.0
Kanektok[c]	295	Female	1.7	45.1	0.7	5.8	0.0	0.0	0.0	53.2
		Male	3.4	31.2	0.0	11.5	0.7	0.0	0.0	46.8
		Total	5.1	76.3	0.7	17.3	0.7	0.0	0.0	100.0
Goodnews[d]	578	Female	0.0	6.1	0.0	39.3	0.0	1.6	0.0	46.9
		Male	0.0	4.0	0.0	46.7	0.0	2.4	0.0	53.1
		Total	0.0	10.0	0.0	86.0	0.0	4.0	0.0	100.0

[a]Samples collected 7/15-7/16 and 8/10-8/11 from weir.
[b]Samples collected from set net (n=43) and beach seine (n=123) and may not be representative of escapement.
[c]Samples collected by beach seine 7/8-8/10.
[d]Samples collected by beach seine 6/27-7/29.

Table 10. Length (in mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area sockeye salmon escapement samples, 1987.

River	Sex		Brood Year and Age Group 1983 0.3	1983 1.2	1982 0.4	1982 1.3	1982 2.2	1981 1.4	1981 2.3
Kogrukluk[a]	Female	Mean length				554			
		Std Error				3.8			
		Sample Size				26			
	Male	Mean length	575			593			
		Std Error	0.0			6.1			
		Sample Size	1			16			
Holitna[b]	Female	Mean length				565		593	578.0
		Std Error				2.7		6.4	2.5
		Sample Size				94		14	2
	Male	Mean length		445		604			585.0
		Std Error		0.0		3.2			15.0
		Sample Size		1		53			2.0
Kanektok[c]	Female	Mean length	557	499	550	559			
		Std Error	18.0	2.1	40.0	6.0			
		Sample Size	5	133	2	17			
	Male	Mean length	581	529		588	523		
		Std Error	7.5	2.8		6.6	17.5		
		Sample Size	10	92		34	2		
Goodnews[d]	Female	Mean length		517		560		575	
		Std Error		6.0		1.7		10.8	
		Sample Size		35		227		9	
	Male	Mean length		577		601		631	
		Std Error		7.5		1.6		7.0	
		Sample Size		23		269		14	

[a]Samples collected at weir 7/15-7/16.
[b]Samples collected from one subsistence set net 7/4-7/24.
[c]Samples collected in beach seine 7/8-8/10.
[d]Samples collected in beach seine 6/27-7/29.

Table 11. Total harvest of Kuskokwim area coho salmon in numbers of fish by age, sex, and fishery,1987.

District	Fishery	Sample Size	Sex	Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
1	Commercial[a]	820	Female	14097	148490	34773	197360
			Male	15507	144260	28194	187961
			Total	29604	292750	62967	385321
2	Commercial[a]		Female	518	5451	1277	7246
			Male	569	5296	1035	6900
			Total	1087	10748	2312	14146
	Subsistence[b]		Female	656	6905	1617	9177
			Male	721	6708	1311	8740
			Total	1377	13613	2928	17917
4	Commercial[c]	224	Female	2235	24364	671	27270
			Male	1788	21012	0	22800
			Total	4023	45376	671	50070
	Subsistence[c]		Female	6	61	2	68
			Male	4	52	0	57
			Total	10	113	2	125
5	Commercial[d]	222	Female	1178	10209	524	11911
			Male	2356	14267	524	17146
			Total	3534	24476	1047	29057
	Subsistence[d]		Female	2	15	1	18
			Male	3	21	1	25
			Total	5	36	2	43
TOTAL HARVEST			Female	18,692	195,495	38,865	253,052
			Male	20,948	191,616	31,065	243,629
			Total	39,640	387,111	69,930	496,681

[a]Estimates based on District 1 commercial catch samples.
[b]Entire Kuskokwim River subsistence harvest.
[c]Estimates based on District 4 commercial catch samples.
[d]Estimates based on District 5 commercial catch samples.

Table 12. Length (in mm from mid-eye to fork-of-tail)) by age and sex of Kuskokwim area coho salmon commercial catch samples, 1987.

			Brood Year and Age Group		
			1984	1983	1982
Fishery	Sex		1.1	2.1	3.1
District 1	Female	Mean length	571	572	577
		Std Error	6.4	1.5	3.2
		Sample Size	30	316	74
	Male	Mean length	577	579	589
		Std Error	6.0	2.0	3.8
		Sample Size	33	307	60
District 4	Female	Mean length	557	600	585
		Std Error	10.8	2.8	32.0
		Sample Size	10	109	3
	Male	Mean length	544	600	
		Std Error	15.6	4.5	
		Sample Size	8	94	
District 5	Female	Mean length	559	579	585
		Std Error	17.3	8.3	28.2
		Sample Size	9	78	4
	Male	Mean length	563	597	621
		Std Error	11.4	5.0	18.3
		Sample Size	18	109	4

Table 13. Age and sex composition of Kogrukluk River coho salmon escapement weir samples, 1987.

		Brood Year and Age Group			
		1984	1983	1982	
		1.1	2.1	3.1	Total
Sampling Dates: 8/10-9/16 Sample Size: 435					
Female	Percent of Sample	3.2	34.5	4.6	42.3
Male	Percent of Sample	9.2	44.4	4.1	57.7
Total	Percent of Sample	12.4	78.9	8.7	100.0

Table 14. Length (in mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area coho salmon escapement samples, 1987.

			Brood Year and Age Group		
			1984	1983	1982
River	Sex		1.1	2.1	3.1
Kogrukluk[a]	Female	Mean length	560	565	565
		Std Error	5.9	1.9	6.6
		Sample Size	14	150	20
	Male	Mean length	551	563	576
		Std Error	5.4	2.5	8.6
		Sample Size	40	193	18

[a]Samples collected at weir 8/10-9/23.

Table 15. Total harvest of Kuskokwim area chum salmon by age, sex, and fishery, 1987.

District	Fishery	Sample Size	Sex	Brood Year and Age Group 1984 0.2	1983 0.3	1982 0.4	1981 0.5	Total
1	Commercial[a]	1312	Female	4750	177031	141193	2159	325,132
			Male	4750	118740	114854	3022	241,367
			Total	9499	295771	256047	5181	566,499
2	Commercial[a]		Female	66	2449	1953	30	4,498
			Male	66	1643	1589	42	3,339
			Total	131	4092	3542	72	7,837
	Subsistence[b]		Female	579	21577	17209	263	39,628
			Male	579	14473	13999	368	29,419
			Total	1158	36050	31208	632	69,047
4	Commercial[c]	241	Female	0	1491	2272	0	3,764
			Male	0	1775	3018	0	4,793
			Total	0	3267	5290	0	8,557
	Subsistence[c]		Female	0	189	288	0	477
			Male	0	225	382	0	607
			Total	0	414	670	0	1,084
5	Commercial[d]	430	Female	0	5830	3318	0	9,148
			Male	0	7584	3650	0	11,233
			Total	0	13414	6967	0	20,381
	Subsistence[d]		Female	0	165	94	0	259
			Male	0	215	104	0	319
			Total	0	380	198	0	578
TOTAL HARVEST			Female	5395	208,732	166,327	2,452	382,906
			Male	5395	144,655	137,596	3,432	291,078
			Total	10,790	353,387	303,923	5,884	673,984

[a]Estimates based on District 1 commercial catch samples.
[b]Entire Kuskokwim River subsistence harvest.
[c]Estimates based on District 4 commercial catch samples.
[d]Estimates based on District 5 commercial catch samples.

Table 16. Length (in mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area chum salmon commercial catch samples, 1987.

			Brood Year and Age Group			
			1984	1983	1982	1981
Fishery	Sex		0.2	0.3	0.4	0.5
District 1	Female	Mean length	537	564	584	604
		Std Error	6.9	1.4	1.5	16.0
		Sample Size	11	410	327	5
	Male	Mean length	556	583	602	640
		Std Error	8.2	2.0	2.0	15.5
		Sample Size	11	275	266	7
District 4	Female	Mean length		573	590	
		Std Error		3.3	3.0	
		Sample Size		42	64	
	Male	Mean length		591	617	
		Std Error		4.3	3.7	
		Sample Size		50	85	
District 5	Female	Mean length		572	596	
		Std Error		2.7	3.3	
		Sample Size		123	70	
	Male	Mean length		587	618	
		Std Error		2.4	4.2	
		Sample Size		160	77	

Table 17. Age and sex composition of Kuskokwim River chum salmon escapement samples, 1987.

River	Sample Size	Sex	Brood Year and Age Group 1984 0.2	1983 0.3	1982 0.4	1981 0.5	Total
Kogrukluk[a]	161	Female	0.0	9.9	32.9	1.9	44.7
		Male	0.0	12.4	36.0	6.2	54.7
		Total	0.0	22.4	69.6	8.1	100.0
Holitna[b]	195	Female	0.0	4.6	23.6	0.5	28.7
		Male	0.0	8.7	57.9	4.6	71.3
		Total	0.0	13.3	81.5	5.1	100.0
Kanektok[c]	150	Female	0.0	22.0	30.0	0.0	52.0
		Male	0.0	14.0	32.0	2.0	48.0
		Total	0.0	36.0	62.0	2.0	100.0
Goodnews[d]	467	Female	0.2	22.3	10.1	0.0	32.5
		Male	0.0	37.3	30.2	0.0	67.5
		Total	0.2	59.5	40.3	0.0	100.0

[a]Samples collected at weir on 7/15-7/16 and 8/10-8/14.
[b]Samples collected from gill net (n=164) and beach seine (n=31).
[c]Samples collected in beach seine from 7/8-7/15.
[d]Samples collected in beach seine from 7/02-7/17.

Table 18. Length (in mm from mid-eye to fork-of-tail) by age and sex of Kuskokwim area chum salmon escapement samples, 1987.

			Brood Year and Age Group			
			1984	1983	1982	1981
Fishery	Sex		0.2	0.3	0.4	0.5
Kogrukluk[a]	Female	Mean length		517	551	562
		Std Error		6.6	4.3	15.9
		Sample Size		16	53	3
	Male	Mean length		536	578	587
		Std Error		7.4	4.4	11.5
		Sample Size		20	58	10
Holitna[b]	Female	Mean length		573	588	590
		Std Error		13.4	3.9	0.0
		Sample Size		9	46	1
	Male	Mean length		586	616	621
		Std Error		6.7	2.4	12.0
		Sample Size		17	113	9
Kanektok[c]	Female	Mean length		547	573	
		Std Error		6.6	5.8	
		Sample Size		33	45	
	Male	Mean length		577	603	587
		Std Error		9.2	5.1	8.3
		Sample Size		21	48	3
Goodnews[d]	Female	Mean length	540	562	592	
		Std Error	0	2.9	3.8	
		Sample Size	1	104	47	
	Male	Mean length		595	621	
		Std Error		2.0	2.7	
		Sample Size		174	141	

[a]Samples collected at weir from 7/15-8/14.
[b]Samples collected from one subsistence get gill net 7/4-7/22.
[c]Samples collected from beach seine 7/8-7/15.
[d]Samples collected from beach seine 7/2-7/17.

APPENDIX A

COMMERCIAL CATCH BY DISTRICT

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Appendix A.1. Kuskokwim District 1, commercial catch of salmon by species and period, 1987.

			COMMERCIAL CATCH				
PERIOD	HOURS	PERMITS[a]	CHINOOK	SOCKEYE	COHO	PINK	CHUM
1 JUNE 18	9	526	19,126	9,508	0	0	14,137
2 JUNE 24	9	607	0	24,355	0	0	54,454
3 JUNE 30	9	564	0	39,112	0	0	112,963
4 JULY 03	6	580	5,970	44,030	0	0	66,783
5 JULY 07	6	578	3,636	9,196	0	1	103,059
6 JULY 11	6	597	1,910	4,611	1	0	72,118
7 JULY 15	6	569	1,415	2,301	10	4	71,923
8 JULY 20	6	551	1,343	826	500	11	65,135
9 AUGUST 06	6	590	207	271	49,182	4	4,074
10 AUGUST 13	6	604	103	222	104,968	2	894
11 AUGUST 17	6	595	76	133	73,867	3	378
12 AUGUST 19	6	585	36	25	45,277	1	156
13 AUGUST 21	6	540	26	16	33,601	2	140
14 AUGUST 24	6	500	27	4	27,607	8	108
15 AUGUST 27	6	479	13	9	21,772	3	70
16 AUGUST 31	6	364	7	5	12,873	1	57
17 SEPT. 03	6	278	8	3	11,352	1	31
18 SEPT. 07	6	132	4	4	4,311	0	19
SEASON TOTAL	117	703	33,907	134,631	385,321	41	566,499

[a]Number of fishermen making at least one delivery.

Appendix A.2. Kuskokwim District 2, commercial catch of salmon by species and period, 1987.

PERIOD	HOURS	PERMITS[a]	COMMERCIAL CATCH CHINOOK	SOCKEYE	COHO	PINK	CHUM
1	JULY 03	6	15	1,325	511	0	0	3,200
2	JULY 07	6	22	935	1,459	0	0	4,152
3	AUGUST 13	6	14	4	1	2,273	2	304
4	AUGUST 17	6	14	6	0	3,374	0	102
5	AUGUST 19	6	13	1	0	3,928	0	39
6	AUGUST 21	6	18	1	0	4,571	0	40
SEASON TOTAL		36	29	2,272	1,971	14,146	2	7,837

[a]Number of fishermen making at least one delivery.

Appendix A.3 Kuskokwim District 4, commercial catch of salmon by species and period, 1987.[a]

PERIOD	HOURS	PERMITS[a]	COMMERCIAL CATCH CHINOOK	SOCKEYE	COHO	PINKS	CHUMS
1 JUNE 18-19	12	126	7,614	468	0	0	1,162
2 JUNE 22-23	12	253	10,586	746	0	0	1,051
3 JUNE 25	6	182	4,539	1,292	0	0	1,711
4 JUNE 30	6	79	690	1,360	0	0	2,066
5 JULY 03-04	12	105	2,319	2,244	0	0	1,959
6 AUGUST 3	12	67	53	73	840	0	110
7 AUGUST 6	12	69	78	153	4,206	0	285
8 AUGUST 10	12	177	62	38	8,210	0	101
9 AUGUST 13	12	116	16	16	6,612	3	19
10 AUGUST 17	12	96	15	25	5,253	2	29
11 AUGUST 19	12	70	12	3	2,819	1	9
12 AUGUST 21	12	73	13	7	3,662	1	6
13 AUGUST 24	12	90	4	2	3,240	2	6
14 AUGUST 26	12	121	6	3	4,717	7	9
15 AUGUST 28	12	82	8	7	2,753	2	4
16 AUGUST 31	12	65	1	20	2,340	6	10
17 SEPTEMBER 02	12	80	4	14	3,627	23	7
18 SEPTEMBER 04	12	48	2	18	1,791	19	13
19 SEPTEMBER 07	12		NO COMMERCIAL FISHING-NO BUYERS				
TOTAL	216	310	26,022	6,489	50,070	66	8,557

[a]Number of fishermen making one delivery.

Appendix A.4. Kuskokwim District 5, commercial catch of salmon by species and period, 1987.[a]

PERIOD	HOURS	PERMITS[a]	COMMERCIAL CATCH CHINOOK	SOCKEYE	COHO	PINKS	CHUMS
1 JUNE 18-19	12	26	387	596	0	0	254
2 JUNE 24	12	33	476	1,892	0	0	1,188
3 JUNE 30	12	33	927	5,094	0	0	2,048
4 JULY 03	12	56	391	5,510	0	0	3,074
5 JULY 07	12	69	739	4,406	0	0	4,478
6 JULY 11	12	75	208	3,826	0	0	5,830
7 JULY 15	12	70	77	2,780	0	1	1,944
8 JULY 20	12	52	75	1,679	1	1	1,265
9 AUGUST 03	12	29	24	630	102	2	105
10 AUGUST 10	12	30	10	398	933	3	36
11 AUGUST 13	12	23	5	204	1,102	4	22
12 AUGUST 17	12	23	7	137	3,002	7	22
13 AUGUST 19	12	31	10	99	3,397	3	16
14 AUGUST 21	12	31	0	85	1,921	2	10
15 AUGUST 24	12	49	6	66	3,804	2	8
16 AUGUST 26	12	51	4	81	3,249	4	42
17 AUGUST 28	12	53	3	79	3,529	3	11
18 AUGUST 31	12	46	2	74	3,143	8	9
19 SEPTEMBER 02	12	40	5	69	3,233	7	10
20 SEPTEMBER 04	12	41	1	53	1,641	7	9
21 SEPTEMBER 07	12	NO COMMERCIAL FISHING-NO BUYERS					
TOTAL	252	69	3,357	27,758	29,057	54	20,381

[a]Number of fishermen who made at least one delivery.

APPENDIX B

ESTIMATED ESCAPEMENT BY LOCATION

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Appendix B.1 Kogrukluk River weir daily and cumulative salmon escapement count by species, 1987.[a]

DATE	CHINOOK COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	SOCKEYE COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	COHO COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	CHUM COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT
15-JUL	233	233	30.3	78	78	27.5	0	0	0	577	577	24.4
16-JUL	347	580	75.3	171	249	87.7	0	0	0	1163	1740	73.6
17-JUL		580	75.3		249	87.7					1740	73.6
18-JUL		580	75.3		249	87.7					1740	73.6
19-JUL		580	75.3		249	87.7					1740	73.6
20-JUL		580	75.3		249	87.7					1740	73.6
21-JUL		580	75.3		249	87.7					1740	73.6
21-JUL		580	75.3		249	87.7					1740	73.6
22-JUL		580	75.3		249	87.7					1740	73.6
23-JUL		580	75.3		249	87.7					1740	73.6
24-JUL		580	75.3		249	87.7					1740	73.6
25-JUL		580	75.3		249	87.7					1740	73.6
26-JUL		580	75.3		249	87.7					1740	73.6
27-JUL		580	75.3		249	87.7					1740	73.6
28-JUL		580	75.3		249	87.7					1740	73.6
29-JUL		580	75.3		249	87.7					1740	73.6
30-JUL		580	75.3		249	87.7					1740	73.6
31-JUL		580	75.3		249	87.7					1740	73.6
01-AUG		580	75.3		249	87.7					1740	73.6
02-AUG		580	75.3		249	87.7					1740	73.6
03-AUG		580	75.3		249	87.7					1740	73.6
04-AUG		580	75.3		249	87.7					1740	73.6
05-AUG		580	75.3		249	87.7					1740	73.6
06-AUG		580	75.3		249	87.7					1740	73.6
07-AUG		580	75.3		249	87.7					1740	73.6
08-AUG		580	75.3		249	87.7					1740	73.6
09-AUG	1	581	75.5	2	251	88.4	3	3	0.0	27	1767	74.7
10-AUG	15	596	77.4	5	256	90.1	8	11	0.1	98	1865	78.9
11-AUG	11	607	78.8	6	262	92.3	18	29	0.1	90	1955	82.7
12-AUG	18	625	81.2	0	262	92.3	29	58	0.3	96	2051	86.7
13-AUG	11	636	82.6	1	263	92.6	35	93	0.5	64	2115	89.4
14-AUG	15	651	84.5	2	265	93.3	39	132	0.7	42	2157	91.2
15-AUG	9	660	85.7	1	266	93.7	61	193	1.0	35	2192	92.7
16-AUG	14	674	87.5	1	267	94.0	86	279	1.4	15	2207	93.3
17-AUG	17	691	89.7	3	270	95.1	140	419	2.1	28	2235	94.5
18-AUG	11	702	91.2	2	272	95.8	243	662	3.4	29	2264	95.7

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Appendix B.1 (page 2 of 3).

DATE	CHINOOK COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	SOCKEYE COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	COHO COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	CHUM COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT
19-AUG	6	708	91.9	1	273	96.1	199	861	4.4	22	2286	96.7
20-AUG	12	720	93.5	1	274	96.5	298	1159	5.9	20	2306	97.5
21-AUG	11	731	94.9	1	275	96.8	412	1571	8.0	13	2319	98.1
22-AUG	5	736	95.6	0	275	96.8	286	1857	9.4	7	2326	98.4
23-AUG	5	741	96.2	1	276	97.2	318	2175	11.0	6	2332	98.6
24-AUG	6	747	97.0	1	277	97.5	527	2702	13.7	6	2338	98.9
25-AUG	5	752	97.7	0	277	97.5	658	3360	17.0	3	2341	99.0
26-AUG	2	754	97.9	1	278	97.9	776	4136	20.9	1	2342	99.0
27-AUG	2	756	98.2	0	278	97.9	762	4898	24.8	5	2347	99.2
28-AUG	2	758	98.4	0	278	97.9	814	5712	28.9	1	2348	99.3
29-AUG	0	758	98.4	0	278	97.9	1151	6863	34.7	4	2352	99.5
30-AUG	0	758	98.4	0	278	97.9	1141	8004	40.5	2	2354	99.5
31-AUG	2	760	98.7	0	278	97.9	1824	9828	49.7	0	2354	99.5
01-SEP	1	761	98.8	1	279	98.2	1008	10836	54.8	1	2355	99.6
02-SEP	2	763	99.1	1	280	98.6	1773	12609	63.8	4	2359	99.7
03-SEP	0	763	99.1	0	280	98.6	1160	13769	69.7	2	2361	99.8
04-SEP	3	766	99.5	0	280	98.6	2950	16719	84.6	3	2364	100.0
05-SEP	2	768	99.7	0	280	98.6	1053	17772	90.0	0	2364	100.0
06-SEP	0	768	99.7	0	280	98.6	962	18734	94.8	0	2364	100.0
07-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
08-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
09-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
10-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
11-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
12-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
13-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
14-SEP		768	99.7		280	98.6		18734	94.8		2364	100.0
15-SEP	0	768	99.7	0	280	98.6	21	18755	94.9	0	2364	100.0
16-SEP	0	768	99.7	0	280	98.6	61	18816	95.2	0	2364	100.0
17-SEP	2	770	100.0	0	280	98.6	123	18939	95.9	0	2364	100.0
18-SEP	0	770	100.0	0	280	98.6	75	19014	96.2	0	2364	100.0
19-SEP	0	770	100.0	0	280	98.6	151	19165	97.0	1	2365	100.0
20-SEP	0	770	100.0	1	281	98.9	253	19418	98.3	0	2365	100.0

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Appendix B.1 (page 3 of 3).

DATE	CHINOOK COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	SOCKEYE COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	COHO COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	CHUM COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT
21-SEP	0	770	100.0	1	282	99.3	110	19528	98.8	0	2365	100.0
22-SEP	0	770	100.0	1	283	99.6	53	19581	99.1	0	2365	100.0
23-SEP	0	770	100.0	1	284	100.0	175	19756	100.0	0	2365	100.0
24-SEP	0	770	100.0	0	284	100.0				0	2365	100.0
TOTAL		770[b]			284[b]			19756[c]			2365[b]	

[a]Weir was not operational 7/17-8/8 and 9/7-9/14.
[b]Actual count.
[c]Actual count. Total escapement estimated at 23,959, based on historic proportion data.

Appendix B.2 Kanektok River sonar daily and cumulative chinook, sockeye, and chum salmon escapement counts, 1987, based on gill net test fishing to assign sonar counts to species; no counts were assigned to coho or pink salmon.

DATE	DAILY CHINOOK COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	DAILY SOCKEYE COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT	DAILY CHUM COUNT	CUMULATIVE COUNT	CUMULATIVE PERCENT
27-JUN	410	410	3.7	0	0	0.0	0	0	0.0
28-JUN	195	605	5.5	0	0	0.0	0	0	0.0
29-JUN	360	965	8.7	97	97	0.9	0	0	0.0
30-JUN	43	1008	9.1	11	108	1.0	2	2	0.0
01-JUL	152	1160	10.5	35	143	1.4	17	19	0.2
02-JUL	130	1290	11.7	161	304	2.9	0	19	0.2
03-JUL	419	1709	15.5	0	304	2.9	0	19	0.2
04-JUL	227	1936	17.6	83	387	3.7	0	19	0.2
05-JUL	184	2120	19.2	213	600	5.7	0	19	0.2
06-JUL	276	2396	21.7	167	767	7.3	239	258	2.3
07-JUL	896	3292	29.8	0	767	7.3	0	258	2.3
08-JUL	825	4117	37.3	476	1243	11.8	702	960	8.6
09-JUL	641	4758	43.1	556	1799	17.1	68	1028	9.2
10-JUL	261	5019	45.5	339	2138	20.3	851	1879	16.9
11-JUL	323	5342	48.4	795	2933	27.9	809	2688	24.2
12-JUL	620	5962	54.1	538	3471	33.0	658	3346	30.1
13-JUL	530	6492	58.9	738	4209	40.0	814	4160	37.4
14-JUL	269	6761	61.3	374	4583	43.6	413	4573	41.1
15-JUL	567	7328	66.4	789	5372	51.1	871	5444	48.9
16-JUL	1028	8356	75.8	1431	6803	64.7	1580	7024	63.1
17-JUL	905	9261	84.0	1259	8062	76.6	1390	8414	75.6
18-JUL	1768	11029	100.0	2459	10521	100.0	2715	11129	100.0
Total		11,029			10,521			11,129	

Appendix B.3. Goodnews River tower daily and cumulative chinook, sockeye, and chum salmon escapement counts, 1987 expanded from 20-minute counts, including interpolations for missing data.

Date	Chinook Count	Cumulative Count	Percent	Sockeye Count	Cumulative Count	Percent	Chum Count	Cumulative Count	Percent
22-June	0	0	0.0	222	222	0.8	0	0	0.0
23-June	0	0	0.0	193	415	1.4	0	0	0.0
24-June	0	0	0.0	121	536	1.9	0	0	0.0
25-June	0	0	0.0	427	963	3.3	0	0	0.0
26-June	4	4	0.2	697	1660	5.7	7	7	0.0
27-June	0	4	0.2	818	2478	8.6	0	7	0.0
28-June	8	12	0.5	794	3272	11.3	9	16	0.1
29-June	16	28	1.2	771	4043	14.0	17	33	0.2
30-June	36	64	2.8	805	4848	16.8	61	94	0.5
01-July	56	120	5.3	840	5688	19.7	105	199	1.1
02-July	67	187	8.2	1104	6792	23.5	58	257	1.5
03-July	59	246	10.8	1333	8125	28.1	89	346	2.0
04-July	51	297	13.1	1562	9687	33.6	121	467	2.7
05-July	91	388	17.1	1595	11282	39.1	141	608	3.5
06-July	130	518	22.8	1627	12909	44.7	162	770	4.4
07-July	43	561	24.7	1761	14670	50.8	168	938	5.4
08-July	37	598	26.3	1436	16106	55.8	91	1029	5.9
09-July	71	669	29.4	1044	17150	59.4	183	1212	6.9
10-July	141	810	35.7	1292	18442	63.9	343	1555	8.9
11-July	61	871	38.3	873	19315	66.9	281	1836	10.5
12-July	58	929	40.9	1012	20327	70.4	330	2166	12.4
13-July	55	984	43.3	1151	21478	74.4	379	2545	14.5
14-July	213	1197	52.7	1125	22603	78.3	408	2953	16.9
15-July	132	1329	58.5	1412	24015	83.2	289	3242	18.5
16-July	107	1436	63.2	762	24777	85.8	1216	4458	25.4
17-July	114	1550	68.2	438	25215	87.3	990	5448	31.1
18-July	120	1670	73.5	447	25662	88.9	1011	6459	36.9
19-July	85	1755	77.2	449	26111	90.4	695	7154	40.8
20-July	49	1804	79.4	450	26561	92.0	378	7532	43.0
21-July	48	1852	81.5	284	26845	93.0	722	8254	47.1
22-July	69	1921	84.6	478	27323	94.6	1071	9325	53.2
23-July	45	1966	86.5	391	27714	96.0	1479	10804	61.7
24-July	73	2039	89.7	239	27953	96.8	1130	11934	68.1
25-July	58	2097	92.3	382	28335	98.1	1717	13651	77.9
26-July	47	2144	94.4	235	28570	99.0	1069	14720	84.0
27-July	35	2179	95.9	87	28657	99.3	422	15142	86.4
28-July	22	2201	96.9	107	28764	99.6	1552	16694	95.3
29-July	26	2227	98.0	48	28812	99.8	508	17202	98.2
30-July	45	2272	100.0	59	28871	100.0	315	17517	100.0
Total[a]		2272			28871			17,517	

[a]Coho salmon count is 62 total from last day of counting and pink salmon count is 63 for the season with the first pink seen on July 15.

Appendix B.4 Aniak River sonar daily and cumulative chum salmon escapement estimates, 1987. All sonar counts were assumed to be chum salmon.

DATE	DAILY SONAR ESTIMATE	CUMULATIVE COUNT	PERCENT
21-JUN	627	627	0.6
22-JUN	1067	1694	1.6
23-JUN	1500	3194	3.0
24-JUN	4137	7331	6.8
25-JUN	386	7717	7.2
26-JUN	955	8672	8.0
27-JUN	1952	10624	9.9
28-JUN	1936	12560	11.7
29-JUN	1487	14047	13.0
30-JUN	565	14612	13.6
01-JUL	834	15446	14.3
02-JUL	272	15718	14.6
03-JUL	2230	17948	16.6
04-JUL	2694	20642	19.1
05-JUL	6198	26840	24.9
06-JUL	3388	30228	28.0
07-JUL	3772	34000	31.5
08-JUL	2358	36358	33.7
09-JUL	2720	39078	36.3
10-JUL	3720	42798	39.7
11-JUL	6712	49510	45.9
12-JUL	7853	57363	53.2
13-JUL	2799	60162	55.8
14-JUL	4928	65090	60.4
15-JUL	3469	68559	63.6
16-JUL	3646	72205	67.0
17-JUL	4425	76630	71.1
18-JUL	3553	80183	74.4
19-JUL	2656	82839	76.8
20-JUL	3876	86715	80.4
21-JUL	2799	89514	83.0
22-JUL	1721	91235	84.6
23-JUL	2101	93336	86.6
24-JUL	3267	96603	89.6
25-JUL	1118	97721	90.7
26-JUL	2423	100144	92.9
27-JUL	1963	102107	94.7
28-JUL	1664	103771	96.3
29-JUL	2303	106074	98.4
30-JUL	1726	107800	100.0
TOTAL		107,800[a]	

[a]This number differs slightly due to rounding error. Raw counts were expanded for times and areas not ensonified using historic daily proportions for a late migration. Total estimated escapement is 193,464.

APPENDIX C

CHINOOK SALMON

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Appendix C.1 Kuskokwim District 1, commercial chinook salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	1981 1.4	1980 1.5	Total
Stratum Dates: 6/18-9/7						
Sampling Dates: 6/18						
Sample Size: 550						
Female	Percent of Sample	1.6	2.7	16.5	0.9	21.8
	Number in Catch	555	925	5,610	308	7,398
Male	Percent of Sample	45.5	12.9	19.1	0.5	78.0
	Number in Catch	15,412	4,377	6,473	185	26,447
Total[a]	Percent of Sample	47.1	15.6	35.8	1.5	100.0
	Number in Catch	15,967	5,302	12,145	493	33,907
	Standard Error	722	526	694	173	

[a]Based on Kuskokwim District 1, gill net samples.

Appendix C.2. Kuskokwim District 2, commercial chinook salmon catch, age and sex composition, 1987.

		Brood Year and Age Group				
		1983	1982	1981	1980	
		1.2	1.3	1.4	1.5	Total
Stratum Dates: 6/18-9/7						
Female	Percent of Sample	1.6	2.7	16.5	0.9	21.8
	Number in Catch	37	62	376	21	496
Male	Percent of Sample	45.5	12.9	19.1	0.5	78.0
	Number in Catch	1,033	293	434	12	1,772
Total[a]	Percent of Sample	47.1	15.6	35.8	1.5	100.0
	Number in Catch	1,070	355	814	33	2,272
	Standard Error	48	35	46	12	

[a]Based on Kuskokwim District 1 gill net samples.

Appendix C.3. Kuskokwim District 4, commercial chinook salmon catch, age, and sex composition by sample period, 1987.

		Brood Year and Age Group					
		1984	1983	1982	1981	1980	
		1.1	1.2	1.3	1.4	1.5	Total
Stratum Dates: 6/18-9/4, Period 1							
Sampling Dates: 6/18							
Sample Size: 209							
Female	Percent of Sample	0.0	0.0	0.0	22.5	1.4	23.9
	Number in Catch	0	0	0	1,712	109	1,822
Male	Percent of Sample	0.0	24.4	19.1	32.5	0.0	76.1
	Number in Catch	0	1,858	1,457	2,477	0	5,792
Total[a]	Percent of Sample	0.0	24.4	19.1	55.0	1.4	100.0
	Number in Catch	0	1,858	1,457	4,190	109	7,614
	Standard Error	0	227	208	263	63	
Stratum Dates: 6/18-9/4, Periods 2 & 3							
Sampling Dates: 6/22-6/25							
Sample Size: 316							
Female	Percent of Sample	0.0	0.0	0.0	12.3	0.6	13.0
	Number in Catch	0	0	0	2,272	117	2,388
Male	Percent of Sample	0.6	28.2	17.1	38.9	2.2	87.0
	Number in Catch	117	5,185	3,146	7,165	408	16,020
Total[b]	Percent of Sample	0.6	28.2	17.1	51.3	2.8	100.0
	Number in Catch	117	5,185	3,146	9,437	524	18,408
	Standard Error	82	467	390	518	173	
Stratum Dates: 6/18-9/4, Season Total							
Sampling Dates: 6/18-6/25							
Sample Size: 525							
Female	Percent of Sample	0.0	0.0	0.0	16.4	1.0	17.3
	Number in Catch	0	0	0	4,263	248	4,510
Male	Percent of Sample	0.4	26.7	17.9	36.4	1.3	82.7
	Number in Catch	99	6,939	4,659	9,467	347	21,512
Total[c]	Percent of Sample	0.4	26.7	17.9	52.8	2.3	100.0
	Number in Catch	99	6,939	4,659	13,730	595	26,022
	Standard Error	70	503	436	568	170	

[a]Based on Kuskokwim District 4 gill net samples.
[b]Based on Kuskokwim District 4 gill net samples.
[c]Based on Kuskokwim District 4 gill net samples.

Appendix C.4. Kuskokwim District 5, commercial chinook salmon catch, age, and sex composition by sample period, 1987.

		Brood Year and Age Group				
		1983	1982	1981	1980	
		1.2	1.3	1.4	1.5	Total
Stratum Dates: 6/18-9/4, Period 1						
Sampling Dates: 6/18						
Sample Size: 118						
Female	Percent of Sample	1.7	14.4	28.8	2.5	47.5
	Number in Catch	7	56	112	10	184
Male	Percent of Sample	13.6	21.2	17.8	0.0	52.5
	Number in Catch	52	82	69	0	203
Total[a]	Percent of Sample	15.3	35.6	46.6	2.5	100.0
	Number in Catch	59	138	180	10	387
	Standard Error	13	17	18	6	
Stratum Dates: 6/18-9/4, Periods 2-7						
Sampling Dates: 6/24-7/15						
Sample Size: 153						
Female	Percent of Sample	3.9	11.1	38.6	2.6	56.2
	Number in Catch	116	330	1,145	78	1,669
Male	Percent of Sample	12.4	17.6	13.7	0.0	43.8
	Number in Catch	369	524	408	0	1,301
Total[b]	Percent of Sample	16.3	28.8	52.3	2.6	100.0
	Number in Catch	485	854	1,553	78	2,970
	Standard Error	89	109	120	38	
Stratum Dates: 6/18-9/4, Season Total						
Sampling Dates: 6/18-7/15						
Sample Size: 271						
Female	Percent of Sample	3.0	12.5	34.3	2.6	52.4
	Number in Catch	99	421	1,152	87	1,759
Male	Percent of Sample	12.9	19.2	15.5	0.0	47.6
	Number in Catch	434	644	520	0	1,598
Total[c]	Percent of Sample	15.9	31.7	49.8	2.6	100.0
	Number in Catch	533	1,065	1,672	87	3,357
	Standard Error	75	95	102	32	

[a]Based on Kuskokwim District 5 gill net samples.
[b]Based on Kuskokwim District 5 gill net samples.
[c]Based on Kuskokwim District 5 gill net samples.

Appendix C.5. Kuskokwim River subsistence chinook salmon catch, age and sex composition, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	1981 1.4	1980 1.5	Total
Stratum Dates: 6/18-9/7						
Sampling Dates: 6/2-6/22						
Sample Size: 426						
Female	Percent of Sample	0.2	2.8	34.2	2.3	39.5
	Number in Catch	136	1,881	23,019	1,597	26,633
Male	Percent of Sample	5.9	13.2	40.0	1.4	60.5
	Number in Catch	3,973	8,866	26,922	932	40,693
Total[a]	Percent of Sample	6.1	16.0	74.2	3.8	100.0
	Number in Catch	4,109	10,747	49,941	2,529	67,325
	Standard Error	782	1,196	1,429	621	

[a]Ages based on Kuskokwim District 1, subsistence unrestricted mesh gill net samples and apportioned into sex at age by District 1 commercial harvest gill net samples.

Appendix C.6. Kuskokwim District 4, subsistence chinook salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group					
		1984	1983	1982	1981	1980	
		1.1	1.2	1.3	1.4	1.5	Total
Stratum Dates: 6/18-9/04							
Female	Percent of Sample	0.0	0.0	0.0	16.4	1.0	17.3
	Number in Catch	0	0	0	600	35	635
Male	Percent of Sample	0.4	26.7	17.9	36.4	1.3	82.7
	Number in Catch	14	977	656	1,333	49	3,028
Total[a]	Percent of Sample	0.4	26.7	17.9	52.8	2.3	100.0
	Number in Catch	14	977	656	1,933	84	3,663
	Standard Error	10	71	61	80	24	

[a]Based on Kuskokwim District 4 gill net samples.

Appendix C.7 Kuskokwim District 5, subsistence chinook salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group				
		1983	1982	1981	1980	
		1.2	1.3	1.4	1.5	Total
Stratum Dates: 6/18-9/4						
Female	Percent of Sample	3.0	12.5	34.3	2.6	52.4
	Number in Catch	24	102	280	21	428
Male	Percent of Sample	12.9	19.2	15.5	0.0	47.6
	Number in Catch	105	157	126	0	388
Total[a]	Percent of Sample	15.9	31.7	49.8	2.6	100.0
	Number in Catch	129	259	406	21	816
	Standard Error	18	23	25	8	

[a]Based on Kuskokwim District 5 gill net samples.

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APPENDIX D

SOCKEYE SALMON

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Appendix D.1. Kuskokwim District 1, commercial sockeye salmon catch, age, and sex composition, by sample period, 1987.

		Brood Year and Age Group							
		1983		1982			1981		
		0.3	1.2	0.4	1.3	2.2	1.4	2.3	Total
Stratum Dates: 6/18, Period 1									
Sampling Dates: 6/18									
Sample Size: 68									
Female	Percent of Sample	1.5	5.9	0.0	50.0	0.0	0.0	7.4	64.7
	Number in Catch	140	559	0	4,754	0	0	699	6,152
Male	Percent of Sample	0.0	1.5	0.0	25.0	0.0	1.5	7.4	35.3
	Number in Catch	0	140	0	2,377	0	140	699	3,356
Total[a]	Percent of Sample	1.5	7.4	0.0	75.0	0.0	1.5	14.7	100.0
	Number in Catch	140	699	0	7,131	0	140	1,398	9,508
	Standard Error	140	303	0	503	0	140	411	
Stratum Dates: 6/24, Period 2									
Sampling Dates: 6/24									
Sample Size: 331									
Female	Percent of Sample	3.0	5.1	0.0	41.1	1.8	0.3	4.8	56.2
	Number in Catch	736	1,251	0	10,007	441	74	1,177	13,686
Male	Percent of Sample	1.5	1.5	0.0	35.3	0.6	1.5	3.3	43.8
	Number in Catch	368	368	0	8,609	147	368	809	10,669
Total[b]	Percent of Sample	4.5	6.6	0.0	76.4	2.4	1.8	8.2	100.0
	Number in Catch	1,104	1,619	0	18,616	589	441	1,987	24,355
	Standard Error	279	334	0	569	206	179	367	
Stratum Dates: 6/30-9/07, Period 3									
Sampling Dates: 6/30									
Sample Size: 168									
Female	Percent of Sample	0.6	3.0	0.0	39.9	1.2	0.6	10.1	55.4
	Number in Catch	600	2,999	0	40,187	1,200	600	10,197	55,782
Male	Percent of Sample	0.0	3.6	0.6	35.7	0.0	0.6	4.2	44.6
	Number in Catch	0	3,599	600	35,989	0	600	4,199	44,986
Total[c]	Percent of Sample	0.6	6.5	0.6	75.6	1.2	1.2	14.3	100.0
	Number in Catch	600	6,598	600	76,176	1,200	1,200	14,395	100,768
	Standard Error	600	1,929	600	3,349	846	846	2,729	
Stratum Dates: 6/18-9/07, Season Total									
Sampling Dates: 6/18-7/7									
Sample Size: 567									
Female	Percent of Sample	2.1	4.6	0.0	41.8	1.4	0.4	6.7	57.0
	Number in Catch	2,849	6,174	0	56,274	1,900	475	9,023	76,695
Male	Percent of Sample	0.9	2.1	0.2	34.2	0.4	1.2	4.1	43.0
	Number in Catch	1,187	2,849	237	46,064	475	1,662	5,461	57,936
Total[e]	Percent of Sample	3.0	6.7	0.2	76.0	1.8	1.6	10.8	100.0
	Number in Catch	4,037	9,023	237	102,339	2,374	2,137	14,484	134,631
	Standard Error	965	1,415	237	2,416	745	707	1,753	

[a]Based on District 1 gill net samples.
[b]Based on District 1 gill net samples.
[c]Based on District 1 gill net samples.
[d]Based on District 1 gill net samples.
[e]Based on District 1 gill net samples.

Appendix D.2 Kuskokwim District 2, commercial sockeye salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group							
		1983		1982			1981		
		0.3	1.2	0.4	1.3	2.2	1.4	2.3	Total
Stratum Dates: 6/18-9/7									
Female	Percent of Sample	2.1	4.6	0.0	41.8	1.4	0.4	6.7	57.0
	Number in Catch	42	90	0	824	28	7	132	1,123
Male	Percent of Sample	0.9	2.1	0.2	34.2	0.4	1.2	4.1	43.0
	Number in Catch	17	42	3	674	7	24	80	848
Total[a]	Percent of Sample	3.0	6.7	0.2	76.0	1.8	1.6	10.8	100.0
	Number in Catch	59	132	3	1,498	35	31	212	1,971
	Standard Error	14	21	3	35	11	10	26	

[a]Based on District 1 gill net samples.

Appendix D.3 Kuskokwim District 4, commercial sockeye salmon escapement, age and sex composition, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	Total
Stratum Dates: 6/18-9/4				
Sampling Dates: 6/31-7/4				
Sample Size: 153				
Female	Percent of Sample	10.5	30.7	41.2
	Number in Catch	679	1,993	2,672
Male	Percent of Sample	20.3	38.6	58.8
	Number in Catch	1,315	2,502	3,817
Total[a]	Percent of Sample	30.7	69.3	100.0
	Number in Catch	1,993	4,496	6,489
	Standard Error	243	243	

[a]Based on District 4 gill net samples.

Appendix D.4. Kuskokwim District 5, commercial sockeye salmon catch, age and sex composition by sample period, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	Total
Stratum Dates: 6/18-6/24				
Sampling Dates: 6/24				
Sample Size: 89				
Female	Percent of Sample	0.0	57.3	57.3
	Number in Catch	0	1,426	1,426
Male	Percent of Sample	1.1	41.6	42.7
	Number in Catch	28	1,034	1,062
Total[a]	Percent of Sample	1.1	98.9	100.0
	Number in Catch	28	2,460	2,488
	Standard Error	28	28	
Stratum Dates: 6/30				
Sampling Dates: 6/30				
Sample Size: 106				
Female	Percent of Sample	1.9	57.5	59.4
	Number in Catch	96	2,931	3,028
Male	Percent of Sample	3.8	35.8	39.6
	Number in Catch	192	1,826	2,018
Total[b]	Percent of Sample	5.7	94.3	100.0
	Number in Catch	288	4,806	5,094
	Standard Error	115	115	
Stratum Dates: 7/7-7/11				
Sampling Dates: 7/7-7/11				
Sample Size: 232				
Female	Percent of Sample	4.3	45.7	50.0
	Number in Catch	592	6,279	6,871
Male	Percent of Sample	3.4	46.6	50.0
	Number in Catch	474	6,397	6,871
Total	Percent of Sample	7.8	92.2	100.0
	Number in Catch	1,066	12,676	13,742
	Standard Error	242	242	

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		Brood Year and Age Group 1983 1.2	1982 1.3	Total
Stratum Dates: 7/15-9/4				
Sampling Dates: 7/15				
Sample Size: 119				
Female	Percent of Sample	3.4	34.5	37.8
	Number in Catch	216	2,217	2,433
Male	Percent of Sample	7.6	54.6	62.2
	Number in Catch	487	3,514	4,001
Total[c]	Percent of Sample	10.9	89.1	100.0
	Number in Catch	703	5,731	6,434
	Standard Error	185	185	
Stratum Dates: 6/18-9/4, Season Total				
Sampling Dates: 6/24-7/15				
Sample Size: 546				
Female	Percent of Sample	2.9	47.4	50.4
	Number in Catch	813	13,167	13,981
Male	Percent of Sample	4.0	45.4	49.5
	Number in Catch	1,118	12,608	13,726
Total[d]	Percent of Sample	7.0	93.0	100.0
	Number in Catch	1,932	25,826	27,758
	Standard Error	303	303	

[a]Based on District 5 gill net samples.
[b]Based on District 5 gill net samples.
[c]Based on District 5 gill net samples.
[d]Based on District 5 gill net samples.

Appendix D.5. Kuskokwim District 1, subsistence sockeye salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group							
		1983		1982			1981		
		0.3	1.2	0.4	1.3	2.2	1.4	2.3	Total
Stratum Dates: 6/18-9/7									
Female	Percent of Sample	2.1	4.6	0.0	41.8	1.4	0.4	6.7	57.0
	Number in Catch	625	1,354	0	12,344	417	104	1,979	16,824
Male	Percent of Sample	0.9	2.1	0.2	34.2	0.4	1.2	4.1	43.0
	Number in Catch	260	625	52	10,105	104	365	1,198	12,709
Total[a]	Percent of Sample	3.0	6.7	0.2	76.0	1.8	1.6	10.8	100.0
	Number in Catch	885	1,979	52	22,449	521	469	3,177	29,533
	Standard Error	212	310	52	530	163	155	385	

[a]Based on District 1 gill net samples.

Appendix D.6. Kuskokwim District 4, subsistence sockeye salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	Total
Stratum Dates: 6/18-9/4				
Female	Percent of Sample	10.5	30.7	41.2
	Number in Catch	112	328	439
Male	Percent of Sample	20.3	38.6	58.8
	Number in Catch	216	411	628
Total[a]	Percent of Sample	30.7	69.3	100.0
	Number in Catch	328	739	1,067
	Standard Error	40	40	

[a]Based on District 4 gill net samples.

Appendix D.7. Kuskokwim District 5, subsistence sockeye salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1983 1.2	1982 1.3	Total
Stratum Dates: 6/18-9/4				
Female	Percent of Sample	2.9	47.4	50.4
	Number in Catch	28	453	481
Male	Percent of Sample	4.0	45.4	49.5
	Number in Catch	38	434	472
Total[a]	Percent of Sample	7.0	93.0	100.0
	Number in Catch	66	889	955
	Standard Error	10	10	

[a]Based on District 5 gill net samples.

APPENDIX E

COHO SALMON

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Appendix E.1 Kuskokwim District 1, commercial coho salmon catch age, and sex composition by sample period, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 8/6, Period 9					
Sampling Dates: 8/6					
Sample Size: 126					
Female	Percent of Sample	9.5	37.3	9.5	56.3
	Number in Catch	4,733	18,536	4,733	28,002
Male	Percent of Sample	0.8	36.5	6.3	43.7
	Number in Catch	394	18,142	3,155	21,691
Total[a]	Percent of Sample	10.3	73.8	15.9	100.0
	Number in Catch	5,127	36,678	7,888	49,693
	Standard Error	1,352	1,954	1,624	
Stratum Dates: 8/13, Period 10					
Sampling Dates: 8/13					
Sample Size: 111					
Female	Percent of Sample	1.8	46.8	8.1	56.8
	Number in Catch	1,891	49,174	8,511	59,576
Male	Percent of Sample	7.2	31.5	4.5	43.2
	Number in Catch	7,565	33,098	4,728	45,392
Total[b]	Percent of Sample	9.0	78.4	12.6	100.0
	Number in Catch	9,457	82,272	13,239	104,968
	Standard Error	2,865	4,120	3,323	
Stratum Dates: 8/17-8/19, Periods 11 & 12					
Sampling Dates: 8/17,8/19					
Sample Size: 158					
Female	Percent of Sample	2.5	42.4	8.2	53.2
	Number in Catch	3,016	50,523	9,803	63,342
Male	Percent of Sample	1.9	36.1	8.9	46.8
	Number in Catch	2,262	42,982	10,557	55,802
Total[c]	Percent of Sample	4.4	78.5	17.1	100.0
	Number in Catch	5,279	93,505	20,360	119,144
	Standard Error	1,957	3,908	3,579	

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Appendix E.1. (page 2 of 2).

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 8/21-8/24, Periods 13 & 14					
Sampling Dates: 8/21,8/24					
Sample Size: 147					
Female	Percent of Sample	2.7	35.4	12.2	50.3
	Number in Catch	1,666	21,652	7,495	30,812
Male	Percent of Sample	3.4	39.5	6.8	49.7
	Number in Catch	2,082	24,150	4,164	30,396
Total[d]	Percent of Sample	6.1	74.8	19.0	100.0
	Number in Catch	3,747	45,802	11,659	61,208
	Standard Error	1,214	2,198	1,989	
Stratum Dates: 8/27-9/7, Periods 15-17					
Sampling Dates: 8/27,8/31,9/3					
Sample Size: 278					
Female	Percent of Sample	2.9	35.3	7.9	46.0
	Number in Catch	1,448	17,734	3,981	23,163
Male	Percent of Sample	5.8	39.9	8.3	54.0
	Number in Catch	2,895	20,087	4,162	27,145
Total[e]	Percent of Sample	8.6	75.2	16.2	100.0
	Number in Catch	4,343	37,821	8,143	50,308
	Standard Error	849	1,306	1,113	
Stratum Dates: 6/18-9/7, Season Total					
Sampling Dates: 8/6-9/3					
Sample Size: 820					
Female	Percent of Sample	3.7	38.5	9.0	51.2
	Number in Catch	14,097	148,490	34,773	197,360
Male	Percent of Sample	4.0	37.4	7.3	48.8
	Number in Catch	15,507	144,260	28,194	187,961
Total[f]	Percent of Sample	7.7	76.0	16.3	100.0
	Number in Catch	29,604	292,750	62,967	385,321
	Standard Error	3,586	5,752	4,978	

[a]Based on Kuskokwim District 1 gill net samples.
[b]Based on Kuskokwim District 1 gill net samples.
[c]Based on Kuskokwim District 1 gill net samples.
[d]Based on Kuskokwim District 1 gill net samples.
[e]Based on Kuskokwim District 1 gill net samples.
[f]Based on Kuskokwim District 1 gill net samples.

Appendix E.2. Kuskokwim District 2, commercial coho salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 6/18-9/7					
Female	Percent of Sample	3.7	38.5	9.0	51.2
	Number in Catch	518	5,451	1,277	7,246
Male	Percent of Sample	4.0	37.4	7.3	48.8
	Number in Catch	569	5,296	1,035	6,900
Total[a]	Percent of Sample	7.7	76.0	16.3	100.0
	Number in Catch	1,087	10,748	2,312	14,146
	Standard Error	132	211	183	

[a]Based on Kuskokwim District 1 gill net samples.

Appendix E.3. Kuskokwim District 4, commercial coho salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates:	6/18-9/4				
Sampling Dates:	8/10-824				
Sample Size:	224				
Female	Percent of Sample	4.5	48.7	1.3	54.5
	Number in Catch	2,235	24,364	671	27,270
Male	Percent of Sample	3.6	42.0	0.0	45.5
	Number in Catch	1,788	21,012	0	22,800
Total[a]	Percent of Sample	8.0	90.6	1.3	100.0
	Number in Catch	4,023	45,376	671	50,070
	Standard Error	911	977	385	

[a]Based on Kuskokwim District 4 gill net samples.

Appendix E.4. Kuskokwim District 5, commercial coho salmon catch age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates:	6/18-9/4				
Sampling Dates:	8/3-8/19				
Sample Size:	222				
Female	Percent of Sample	4.1	35.1	1.8	41.0
	Number in Catch	1,178	10,209	524	11,911
Male	Percent of Sample	8.1	49.1	1.8	59.0
	Number in Catch	2,356	14,267	524	17,146
Total[a]	Percent of Sample	12.2	84.2	3.6	100.0
	Number in Catch	3,534	24,476	1,047	29,057
	Standard Error	639	712	364	

[a]Based on Kuskokwim District 5 gill net samples.

Appendix E.5 Kuskokwim District 1, subsistence coho salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 6/18-9/7					
Female	Percent of Sample	3.7	38.5	9.0	51.2
	Number in Catch	656	6,905	1,617	9,177
Male	Percent of Sample	4.0	37.4	7.3	48.8
	Number in Catch	721	6,708	1,311	8,740
Total[a]	Percent of Sample	7.7	76.0	16.3	100.0
	Number in Catch	1,377	13,613	2,928	17,917
	Standard Error	167	267	231	

[a]Based on Kuskokwim District 1 gill net samples.

Appendix E.6. Kuskokwim District 4, subsistence coho salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 6/18-9/4					
Female	Percent of Sample	4.5	48.7	1.3	54.5
	Number in Catch	6	61	2	68
Male	Percent of Sample	3.6	42.0	0.0	45.5
	Number in Catch	4	52	0	57
Total[a]	Percent of Sample	8.0	90.6	1.3	100.0
	Number in Catch	10	113	2	125
	Standard Error	2	2	1	

[a]Based on Kuskokwim District 4 gill net samples.

Appendix E.7. Kuskokwim District 5, subsistence coho salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 1.1	1983 2.1	1982 3.1	Total
Stratum Dates: 6/18-9/4					
Female	Percent of Sample	4.1	35.1	1.8	41.0
	Number in Catch	2	15	1	18
Male	Percent of Sample	8.1	49.1	1.8	59.0
	Number in Catch	3	21	1	25
Total[a]	Percent of Sample	12.2	84.2	3.6	100.0
	Number in Catch	5	36	2	43
	Standard Error	1	1	1	

[a]Based on Kuskokwim District 5 gill net samples.

APPENDIX F

CHUM SALMON

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Appendix F.1. Kuskokwim District 1, commercial chum salmon catch, age, and sex composition by sample period, 1987.

		Brood Year and Age Group				
		1984	1983	1982	1981	
		0.2	0.3	0.4	0.5	Total
Stratum Dates: 6/18-6/24, Periods 1 & 2						
Sampling Dates: 6/18,6/24						
Sample Size: 256						
Female	Percent of Sample	0.0	17.2	36.3	1.2	54.7
	Number in Catch	0	11,789	24,918	804	37,511
Male	Percent of Sample	0.0	10.5	34.0	0.8	45.3
	Number in Catch	0	7,234	23,310	536	31,080
Total[a]	Percent of Sample	0.0	27.7	70.3	2.0	100.0
	Number in Catch	0	19,023	48,228	1,340	68,591
	Standard Error	0	1,923	1,962	594	
Stratum Dates: 6/30, Period 3						
Sampling Dates: 6/30						
Sample Size: 214						
Female	Percent of Sample	0.5	25.2	28.0	0.0	53.7
	Number in Catch	528	28,505	31,672	0	60,704
Male	Percent of Sample	0.0	25.7	19.6	0.9	46.3
	Number in Catch	0	29,033	22,170	1,056	52,259
Total[b]	Percent of Sample	0.5	50.9	47.7	0.9	100.0
	Number in Catch	528	57,537	53,842	1,056	112,963
	Standard Error	528	3,869	3,866	745	
Stratum Dates: 7/3-7/7, Periods 4 & 5						
Sampling Dates: 7/3,7/7						
Sample Size: 214						
Female	Percent of Sample	0.5	32.7	26.2	0.0	59.3
	Number in Catch	794	55,556	44,445	0	100,794
Male	Percent of Sample	0.9	21.0	18.7	0.0	40.7
	Number in Catch	1,587	35,714	31,746	0	69,048
Total[c]	Percent of Sample	1.4	53.7	44.9	0.0	100.0
	Number in Catch	2,381	91,270	76,191	0	169,842
	Standard Error	1,368	5,802	5,788	0	

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Appendix F.1. (page 2 of 3).

		Brood Year and Age Group 1984 0.2	1983 0.3	1982 0.4	1981 0.5	Total
Stratum Dates: 7/11, Period 6 Sampling Dates: 7/11 Sample Size: 212						
Female	Percent of Sample	0.9	33.5	23.1	0.5	58.0
	Number in Catch	680	24,153	16,669	340	41,842
Male	Percent of Sample	1.4	21.7	17.9	0.9	42.0
	Number in Catch	1,021	15,648	12,927	680	30,276
Total[d]	Percent of Sample	2.4	55.2	41.0	1.4	100.0
	Number in Catch	1,701	39,801	29,596	1,021	72,118
	Standard Error	753	2,469	2,442	586	
Stratum Dates: 7/15, Period 7 Sampling Dates: 7/15 Sample Size: 198						
Female	Percent of Sample	0.5	38.4	19.7	0.0	58.6
	Number in Catch	363	27,607	14,167	0	42,137
Male	Percent of Sample	1.5	23.7	15.7	0.5	41.4
	Number in Catch	1,090	17,073	11,261	363	29,786
Total[e]	Percent of Sample	2.0	62.1	35.4	0.5	100.0
	Number in Catch	1,453	44,679	25,427	363	71,923
	Standard Error	721	2,486	2,450	363	
Stratum Dates: 7/20-9/7, Period 8 Sampling Dates: 7/20 Sample Size: 218						
Female	Percent of Sample	2.8	43.6	13.8	0.5	60.6
	Number in Catch	1,956	30,967	9,779	326	43,028
Male	Percent of Sample	1.4	25.2	12.8	0.0	39.4
	Number in Catch	978	17,928	9,127	0	28,034
Total[f]	Percent of Sample	4.1	68.8	26.6	0.5	100.0
	Number in Catch	2,934	48,896	18,906	326	71,062
	Standard Error	960	2,235	2,132	326	

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		Brood Year and Age Group 1984 0.2	1983 0.3	1982 0.4	1981 0.5	Total
Stratum Dates: 6/18-9/7, Season Total Sampling Dates: 6/18-7/20 Sample Size: 1,312						
Female	Percent of Sample	0.8	31.3	24.9	0.4	57.4
	Number in Catch	4,750	177,031	141,193	2,159	325,132
Male	Percent of Sample	0.8	21.0	20.3	0.5	42.6
	Number in Catch	4,750	118,740	114,854	3,022	241,367
Total[g]	Percent of Sample	1.7	52.2	45.2	0.9	100.0
	Number in Catch	9,499	295,771	256,047	5,181	566,499
	Standard Error	2,009	7,815	7,787	1,489	

[a]Based on District 1 gill net samples.
[b]Based on District 1 gill net samples.
[c]Based on District 1 gill net samples.
[d]Based on District 1 gill net samples.
[e]Based on District 1 gill net samples.
[f]Based on District 1 gill net samples.
[g]Based on District 1 gill net samples.

Appendix F.2. Kuskokwim District 2, commercial chum salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group				
		1984	1983	1982	1981	
		0.2	0.3	0.4	0.5	Total
Stratum Dates: 7/3-8/21						
Female	Percent of Sample	0.8	31.3	24.9	0.4	57.4
	Number in Catch	66	2,449	1,953	30	4,498
Male	Percent of Sample	0.8	21.0	20.3	0.5	42.6
	Number in Catch	66	1,643	1,589	42	3,339
Total[a]	Percent of Sample	1.7	52.2	45.2	0.9	100.0
	Number in Catch	131	4,092	3,542	72	7,837
	Standard Error	28	108	108	21	

[a]Based on District 1 gill net samples.

Appendix F.3. Kuskokwim District 4, commercial chum salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1983 0.3	1982 0.4	Total
Stratum Dates:	6/18-9/7			
Sampling Dates:	6/30-7/4			
Sample Size:	241			
Female	Percent of Sample	17.4	26.6	44.0
	Number in Catch	1,491	2,272	3,764
Male	Percent of Sample	20.7	35.3	56.0
	Number in Catch	1,775	3,018	4,793
Total[a]	Percent of Sample	38.2	61.8	100.0
	Number in Catch	3,267	5,290	8,557
	Standard Error	268	268	

[a]Based on District 4 gill net samples.

Appendix F.4. Kuskokwim District 5, commercial chum salmon catch, age, and sex composition by sample period, 1987.

		Brood Year and Age Group 1983 0.3	1982 0.4	Total
Stratum Dates: 6/18-6/30, Periods 2 & 3 Sampling Dates: 6/24, 6/30 Sample Size: 130				
Female	Percent of Sample	22.3	26.9	49.2
	Number in Catch	779	940	1,718
Male	Percent of Sample	23.8	26.9	50.8
	Number in Catch	832	940	1,772
Total[a]	Percent of Sample	46.2	53.8	100.0
	Number in Catch	1,611	1,879	3,490
	Standard Error	153	153	
Stratum Dates: 7/1-9/4, Periods 5-7 Sampling Dates: 7/7-7/15 Sample Size: 300				
Female	Percent of Sample	31.3	11.7	43.0
	Number in Catch	5,293	1,971	7,263
Male	Percent of Sample	43.0	14.0	57.0
	Number in Catch	7,263	2,365	9,628
Total[b]	Percent of Sample	74.3	25.7	100.0
	Number in Catch	12,556	4,335	16,891
	Standard Error	427	427	
Stratum Dates: 6/18-9/4, Season Total Sampling Dates: 6/24-7/5 Sample Size: 430				
Female	Percent of Sample	28.6	16.3	44.9
	Number in Catch	5,830	3,318	9,148
Male	Percent of Sample	37.2	17.9	55.1
	Number in Catch	7,584	3,650	11,233
Total[c]	Percent of Sample	65.8	34.2	100.0
	Number in Catch	13,414	6,967	20,381
	Standard Error	467	467	

[a]Based on District 5 gill net samples.
[b]Based on District 5 gill net samples.
[c]Based on District 5 gill net samples.

Appendix F.5. Kuskokwim District 1, subsistence chum salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group 1984 0.2	1983 0.3	1982 0.4	1981 0.5	Total
Stratum Dates: 6/18-9/7						
Female	Percent of Sample	0.8	31.3	24.9	0.4	57.4
	Number in Catch	579	21,577	17,209	263	39,628
Male	Percent of Sample	0.8	21.0	20.3	0.5	42.6
	Number in Catch	579	14,473	13,999	368	29,419
Total[a]	Percent of Sample	1.7	52.2	45.2	0.9	100.0
	Number in Catch	1,158	36,050	31,208	632	69,047
	Standard Error	245	953	949	182	

[a]Based on District 1 gill net samples.

Appendix F.6. Kuskokwim District 4, subsistence chum salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group		
		1983	1982	
		0.3	0.4	Total
Stratum Dates: 6/18-9/4				
Female	Percent of Sample	17.4	26.6	44.0
	Number in Catch	189	288	477
Male	Percent of Sample	20.7	35.3	56.0
	Number in Catch	225	382	607
Total[a]	Percent of Sample	38.2	61.8	100.0
	Number in Catch	414	670	1,084
	Standard Error	34	34	

[a]Based on District 4 gill net samples.

Appendix F.7. Kuskokwim District 5, subsistence chum salmon catch, age, and sex composition, 1987.

		Brood Year and Age Group		
		1983	1982	
		0.3	0.4	Total
Stratum Dates: 6/18-9/4				
Female	Percent of Sample	28.6	16.3	44.9
	Number in Catch	165	94	259
Male	Percent of Sample	37.2	17.9	55.1
	Number in Catch	215	104	319
Total[a]	Percent of Sample	65.8	34.2	100.0
	Number in Catch	380	198	578
	Standard Error	13	13	

[a]Based on District 5 gill net samples.